MANUAL OF LIBRARY BOOKBINDING

PRACTICAL AND HISTORICAL

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WITH AN

INTRODUCTION BY DOUGLAS COCKERELL

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Examiner for the City and Guilds of London Institute, etc.

WITH SPECIMENS OF LEATHERS AND CLOTHS,
FORMS AND ILLUSTRATIONS.

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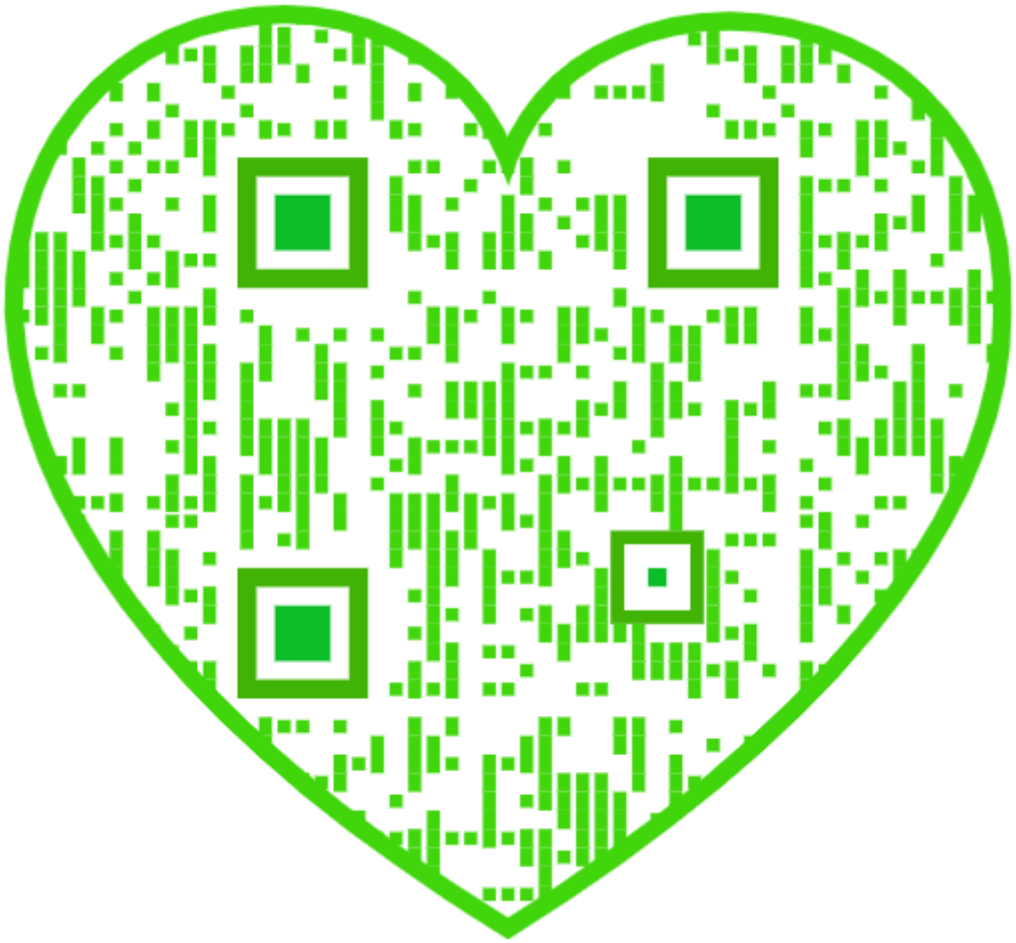

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PREFACE.

THE aim of this Manual is not to supersede the existing treatises on the craft of bookbinding, such as those by Messrs Cockerell and Zaehnsdorf, but to supplement such works by giving prominence to those phases of the subject which are of practical interest to the librarian, and incidentally to the bookbinder who specializes in library binding. An endeavour has been made to give a succinct account of the processes of binding at the present day, by describing the methods of hand and machine binding respectively; to indicate the essential features of library binding; to describe and give actual examples of some of the best and most suitable materials for library binding; to describe the different methods of recording and checking books despatched to the binder; to give practical information on the equipment of small binderies in libraries, and on the repairing of books, as well as to give recipes, miscellaneous information, and a glossary of terms. In preparing this work the Library Association's Professional Examinations were kept in view, with the object of affording information useful to students; for this reason an historical sketch of bookbinding has been included, which, it is hoped, will provide an adequate introduction to the subject, the information being drawn from the best sources.

Our best thanks are due and are hereby tendered to Mr. A. J. Macdonald, for preparing the sketches of the various diagrams included herein; to the Editor of the *Bookbinding Trades Journal*, for the loan of blocks of bindings and book-edges included

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in the historical section; to the Royal Society of Arts for permission to reproduce three diagrams; to Messrs Hampson, Bettridge & Co. for the loan of a block; to the various firms who have provided cuttings of materials; and to our several colleagues who have willingly rendered assistance.

To Mr Douglas Cockerell we desire to express our appreciation of his services in reading the proofs, and in offering practical advice concerning the book.

A library binding requires good workmanship and good materials, for which librarians should be prepared to pay the price. If this book contributes to these desiderata its object will be attained.

H.T.C.

December, 1910 G.A.S.

INTRODUCTION

THIS book, written from the standpoint of the librarian of a public library, cannot fail to be of great interest to all who have to do with the binding of books.

Mr Stephen's experience has given him unequalled facilities for studying the relative durability of the various binding materials and methods of binding.

He and his collaborator, like all librarians, have to complain of the poor quality of the paper used for so many books. This is an old and familiar complaint, well justified by the facts.

The truth is that Bookbinding is only one branch of the Master Craft of Book Production. In course of time it has become isolated, and to this cause can be traced many of the faults of modern books.

To produce a satisfactory book it must be designed as a whole; the paper must be of the right weight for the size of the page; the type area must be designed to fit the page, and the pages must be made up into sections of the right thickness. Too often the binder is handed letterpress printed on rotten paper that cannot be held securely by the sewing thread, together with a number of plates, stiff like playing-cards, and he is blamed if he fails to make a satisfactory volume from such ill-selected materials. A binder can easily make a bad job of binding any book, but there are many books that it is beyond his power to bind in a satisfactory way.

The authors naturally have much to say as to binding

specifications and forms of tender for binding. While undoubtedly these things have a useful side, they are, in the hands of indiscriminating librarians, a possible source of danger. Rigid specifications and forms of tender have undoubtedly brought down the price of public library binding to a very low point in cost and in technique. The price paid is so low that it is impossible for the binder to give that attention to the needs of individual books that is so necessary if satisfactory work is to be turned out. It would often pay to give a binder of good standing rather a freer hand than is usual. He usually knows more about his business than the average librarian or library committee can possibly do. Competition on price alone is not healthy; quality as well as price should be considered.

As a binder I am very glad to welcome this book, which shows on every page the painstaking care of the writers.

DOUGLAS COCKERELL,
Controller,
W. H. SMITH AND SON'S BINDING WORKSHOPS,
LETCHWORTH.

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MANUAL OF LIBRARY BOOKBINDING

CHAPTER I

HAND BOOKBINDING

By Geo. A. Stephen

1. The binding of books at the present day is divided into two main classes, viz. "bound" work, which is effected by hand labour, and "cased" work, which is produced almost entirely by machinery. There are many differences between the two methods; the essential difference is that the boards of a "bound" book are securely attached to the book before the covering material is attached, whereas the cover of a "cased" book is made separately and then simply stuck to the sides of the book. The present chapter will briefly describe the successive operations for hand-work; these do not differ very much from the methods that obtained two or three centuries ago, although from a mechanical point of view the hand-made bindings of the present day generally combine strength and elegance to a greater degree. The various processes in bookbinding are divided into two large branches, viz. "forwarding" and "finishing." The term "forwarding" is applied to all the processes from folding (but strictly it should be from sewing) to covering and pasting down; and "finishing" is applied to all the subsequent operations, which comprise lettering, tooling, polishing, and so forth.

2. If the bookbinder receives the book in sheets from the printer, the first operation is to fold them in sections. Books vary in size according to the size of the printed sheets and the number of folds given to them. The ordinary defined sizes of books are known as *folio*, *quarto*, *octavo*, *duodecimo*, etc., and these sizes signify the number of leaves into which a

sheet is folded. Thus a folio consists of sheets folded once, making two leaves or four pages; a quarto has sheets folded twice, making four leaves or eight pages; and an octavo has sheets folded three times, making eight leaves or sixteen pages. According to the size of the book the sheets are folded into four, eight or sixteen or more leaves to form a "section," the top of which is known as the "head," the bottom as the "tail," and the front edge as the "fore-edge." This folding is done with great rapidity by the application of a bone folding knife, the sheets being doubled and doubled again until the desired number of folds has been made; needless to say, great accuracy must be observed in this operation to see that the headlines and margins are perfectly even.

3. If a book has already been bound or cased, it is first taken to pieces, or "pulled," as this operation is technically termed. To separate a cased book from its cover the boards should be opened until they meet at the back; a knife may then be inserted between the cover and the book, and a cut made through the whole length of the hinge of mull and the tapes or cords, first at the front and afterwards at the back of the book. If the book has been bound the slips (i.e. the tapes or cords) which are laced to the boards must be carefully cut before the boards can be removed. The sections are now separated from each other by cutting the thread, and any glue remaining on the backs of the sections is removed with a folder, each section as it is pulled apart being placed face downwards. If difficulty be experienced in removing the glue in order to separate the sections, the application of paste will soften it and render its removal easy. The threads are then removed from the middle of each section.

If there are any torn pages they are repaired, and all maps, plates, and single leaves are guarded and inserted in their proper places. The average library specification for rebinding stipulates that all plates, maps and single leaves should be guarded with linen, but Mr Douglas Cockerell, in his *Bookbinding and the Care of Books*, recommends the use of good thin paper for this purpose, and reason appears to be on his side. If a guard be made of linen, and the plate is not of good quality paper, the leaf so inserted is liable to form a hinge and ultimately break away at the edge of the linen, as shown in Fig. 1.

4. After guarding, the book is examined by the collator to see that all the sections and plates are in their consecutive order, and that none are missing, transposed, or in duplicate. The collator holds the sections firmly at the head with her right hand, and loosely at the left-hand bottom corner with her left hand; the sections by being turned downward with the right hand spring upward, and they are controlled by the left thumb of the collator as she watches the small figure or letter, technically known as a "signature," printed at the foot of the first page of each section. In commercial work the term "signature" is frequently used as a synonym for "section," but this is to be deprecated.

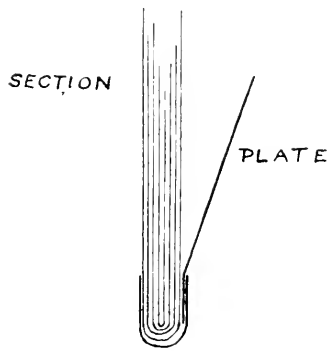

FIG. 1.

5. The sheets before being sewn are generally pressed heavily to make the book as solid as possible for binding. In bygone times this was effected by beating the book on a smooth stone or iron with a short-handled heavy hammer, but it is now usually done more carefully and more expeditiously by passing the book through a rolling machine. Mr Douglas Cockerell recommends the use of an ordinary screw-press for this purpose. A few sections of the book are placed on a wooden pressing board with a tin covered with paper on top; then a few more sections with another tin are placed above these, and so on, until all the sections are in position; finally another pressing board is put on top and the whole is placed in a standing press, where it remains under great pressure over night in order that the sections may be rendered quite flat and solid.

6. Before the book is sewn its end-papers are made, and these should be of the zig-zag kind, as show in Fig. 2, which is copied by courteous permission from the Royal Society of Arts' *Report of the Committee on Leather for Bookbinding*, and which is similar to that shown in Mr Cockerell's *Bookbinding*

and the Care of Books; this method of making end-papers is taught in some of the technical classes for bookbinding.

Leaf A1 is waste and is torn away before leaf B1 is pasted down on the board. An additional fold of plain paper is inserted at C, and sewn through at F; if marbled or other decorated paste-down papers are used they are "made" on to B1. The joints inside the book are frequently covered with strips of linen, cloth, or leather, with a view to strengthening the book.

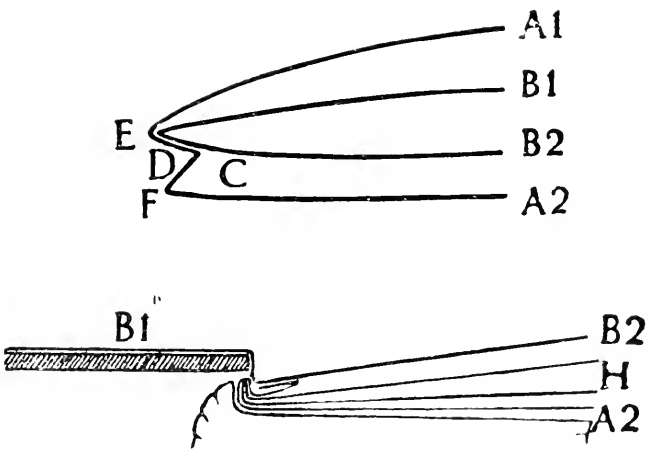

FIG. 2.

These strips are attached to the end-papers at this stage. The term "joint" has three meanings in bookbinders' parlance, being applied to each of (1) the two parts of the covering that bend when the covers are opened; (2) the strips of cloth, leather or other material that are used to reinforce the end-papers; and (3) the grooves formed by the backing process, which are made to receive the boards.

7. The head and back are now knocked up squarely, and the book is ready for "marking up"; that is, the back is divided and marked in order to indicate the exact position of the cords or tapes on which the book is to be sewn, the number of which, to some extent, depends upon the size and thickness of the book. The method of sewing must now be decided

upon, because if the book is to be sewn "flexibly" (Fig. 3, B) pencil marks only are clearly and squarely marked across the back, while if the common "sawn in" method of sewing (Fig. 3, C) is to be adopted small grooves at the pencil marks are made with a tenon saw, so that the cords may lie in them.

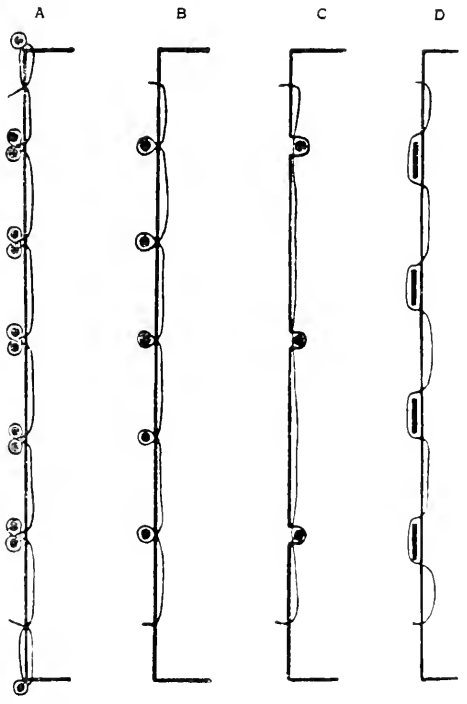

FIG. 3.

8. There are several methods of sewing, as shown in Fig. 3, which is copied from the Royal Society of Arts' Report.

Fig. A shows the medieval method of "flexible" sewing on double cords, or strips of leather, with headbands worked at the head and tail with the same thread. Fig. B illustrates the modern "flexible" sewing round single bands. Fig. C shows ordinary sewing, the cords being sunk in a series of saw

cuts, and Fig. D shows the ordinary method of sewing over tapes.

The sewing is effected by means of a small sewing-frame, or sewing-press (Fig. 4), consisting of a stand, or bed, having two upright wooden screws connected at the top by a cross-bar supported by wooden nuts, which enable it to be raised or lowered. Around the cross-bar are fastened as many loops of cord, called "lay cords" as there are to be cords used in sewing the book. The upper end of each cord is fastened to a lay cord by a simple knot and the lower end is fastened to a metal key. The cords are arranged in vertical positions corresponding with the marks on the back of the book, and they are stretched tightly and secured, by passing each key through a slit in the bed of the sewing press.

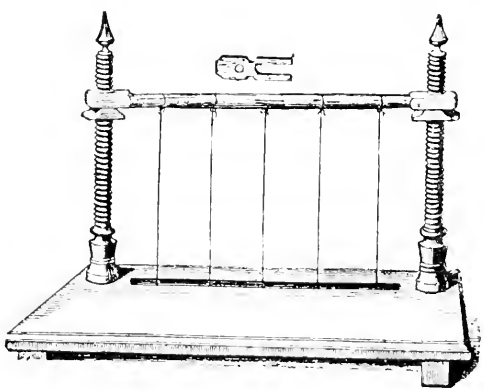

FIG. 4.

The sections to be sewn are then placed on the bed of the press with their backs next to the cords. The sewer passes her left hand behind the cords and inserts it in the middle of the first section; with her right hand she passes the needle and thread through the kettle-stitch mark at the head, and out again at the first cord, leaving the thread projecting at the kettle-stitch; the thread is passed round this cord, making a complete circle (if the book is being sewn flexibly, whereas the thread simply passes over the cord in ordinary sewing) and the needle inserted at this point of egress; and in this manner the section is sewn to all the cords, the thread being passed out at the kettle-stitch mark at the tail of the section. The second section is then laid on top of the first and is sewn in a similar manner, the thread passing from the tail to the head of the section; the thread is then tied to the projecting

end of thread. As the third and succeeding sections are sewn, the thread, each time it is passed out at the end of a section, is formed into a kettle-stitch by being passed under the lower thread (see Fig. 5). These operations proceed until the whole

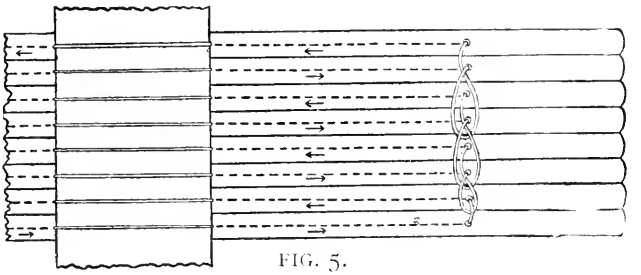

FIG. 5.

book is securely fastened to the cords. The term "kettle-stitch" is frequently referred to as being a corruption of "catch-up stitch," but one writer has suggested a more probable explanation, viz. that the term is derived from the German *Ketten-stich* or chain stitch, or even *Kettel-stich*, or the stitch that forms a little chain.

In the case of a book consisting of a large number of thin sections, the method known as sewing "two sheets on,"

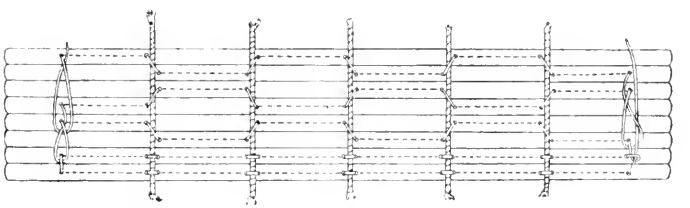

FIG. 6.

or "on and off" is adopted. By this method two sections are treated as one, the thread being passed from one section to the other as it proceeds from the head to the tail, or the tail to the head of the book, as shown in Fig. 6; for the sake of clearness the kettle-stitch is not shown as it is generally worked with the loose end of the thread. The end sections, however, of a

book sewn in this manner are always sewn " all along " so as to give greater strength to the front and back of the book.

9. After the book has been sewn the cords are cut so as to leave about two inches on each side of the book, and the book is then ready for glueing up. The book is knocked up squarely at the back and head, placed between a pair of glueing boards, and then put in a lying press. The back of the book is well brushed over with a thin coating of hot glue, care being taken that the glue is worked in between the sections, so that they are held firmly together. Before the glue has become quite dry the book is rounded and backed.

10. The back of the book is rounded to prevent its assuming a bad convex or concave shape, or it may be a combination of the two; and it is backed to provide the necessary grooves into which the boards should fit. The back is rounded by being laid flat on a table and then tapped with a backing hammer, first on one side and then on the other. The book is then placed between a pair of bevelled boards, called backing boards, and clamped in a lying press, with the back projecting enough to allow the proper grooves to be made; this is effected by striking the back with a hammer, commencing near the middle, in such a way that the folds of the outer sections are turned over from near the centre, down to the bevelled boards, thus forming grooves, as shown in Fig. 7.

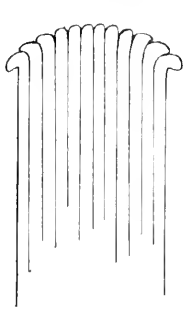

FIG. 7.

11. The next operation is to prepare the millboards which are to form the covers; these should be cut so that they will project about one-eighth to one-quarter inch from the head, tail and fore-edge of the book, such projections being termed " squares." The position of the slips (i.e. the ends of the tapes or cords) is now marked on each board with a bodkin, and holes are made to receive them. Two lines parallel to the back edge are marked on each board, the first being about half an inch from the back edge and the other between a quarter and half an inch further in; the first series of holes is pierced from the outer side of the boards, where the position of the lay cords is marked, and the second series is pierced from the inner side;

between the first row of holes and the back edge a series of **V**-shaped depressions are cut (see Fig. 8) in which the slips will afterwards lie.

The free ends of each cord are unravelled with a bodkin and slightly scraped, and then pasted and twisted to a point to facilitate the cord being passed through one hole and up through the one parallel to it. The cords are pulled fairly tight, and the remaining ends are then cut off close to the boards and carefully beaten into the board by being hammered on a " knocking down " iron, which is an iron casting with a smooth face, made to fit in the lying press.

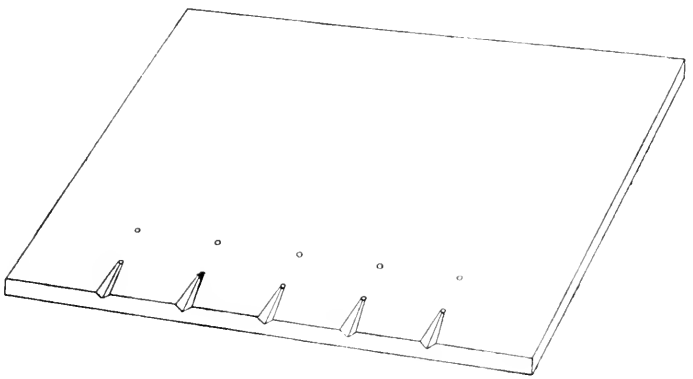

FIG. 8.

If the book has been sewn on tapes the boards are " made " for the purpose of receiving them; a thick board and a thin one are partially glued together, so that about two inches at the back edge may be left open. When the " made " or " split " board is dry, glue is applied to the split portion and the tapes are inserted between the two boards.

12. The book is then placed between a pair of pressing boards and consigned to the standing press, where it should remain overnight, or at least for several hours. While the book is in the press the back receives a thin coat of paste in order to moisten the glue, so that the superfluous glue on the surface can be scraped with the aid of a wooden scraper; and the back is finally rubbed smooth with paper shavings.

When the back is dry the book is removed from the standing press and is ready for "cutting in boards," a phrase used when the book is cut after the boards have been attached. The book is placed in the lying press, and the operation is performed with the aid of a cutting instrument, called a plough, the order of cutting the edges being (1) head, (2) tail, and (3) fore-edge. For cheap work the use of the plough is too expensive, and the edges are therefore cut with a guillotine after the book has been sewn and before it has been rounded and backed.

13. The next process is to decorate the edges of the book, if this be desired. Book edges may be ornamented in several different ways: they may be coloured, sprinkled, marbled, or gilded. The cheapest and commonest methods are sprinkling and colouring. In plain colouring the colour is applied very thinly with a sponge, successive applications being made as each coat becomes dry, until the desired shade is obtained. Sprinkled edges are effected with a brush which has been dipped in a pigment, usually red. The brush is struck forcibly against a stick above the book so that a sprinkling of colour falls upon the edges.

Edge-marbling is a difficult process which necessitates considerable skill on the part of the operator. Briefly, the process is as follows. A large shallow trough is filled with a solution of gum tragacanth or gum dragon of a consistency a little thicker than good milk. Each colour that is to form part of the design, having been ground and mixed with a little ox-gall, is sprinkled separately with a brush over the surface of the gum solution, every spot of colour being kept intact by the ox-gall. The colours are then dexterously manipulated with combs having teeth of different widths, until the desired pattern is formed on the ductile fluid, when the edges of the book are dipped into the solution, and receive the coloured design. The "Josef Halfer" process of marbling is somewhat different, its distinguishing feature being the substitution of Carrageen moss instead of gum as a medium on which to work.

The most elegant form of edge-decoration (excluding hand-painted designs) is gilding, which also has a utilitarian purpose, as dust can be easily and effectively removed from books having gilt tops. The book is placed between two gilding boards and screwed in the lying press, with the edge to be gilt level with

the top of the press. The edge is made perfectly smooth by scraping with a steel scraper and rubbing with fine glass-paper. After this process red chalk (sometimes mixed with black lead) in solution is applied with a sponge. Glaire is afterwards applied, and strips of gold leaf laid on evenly all over the edge. When dry the gold is burnished with a tool tipped with an agate or bloodstone.

14. The headbands are now fixed at the head and tail of the book. These should be worked directly on to the book, and form an integral part of it by being fastened to several of the sections, but frequently machine-made headbands are purchased by the yard, and cut up into small pieces and merely attached with glue.

If the book has been sewn on the common sawn-in method, and it is to have a "hollow back," the back is now lined up by glueing a strip of strong paper to it in such a manner as to form a "hollow." Thick books generally require an extra lining under the leather. If the book is to have a tight back the leather cover, of course, is glued directly to the back.

15. The book is now ready for its covering material. If a book is covered entirely with leather it is said to be "whole bound"; if the leather is applied to the back and one-third the width of the boards, and the book has large leather corners in proportion, the style of binding is known as "three-quarter bound"; while if the leather is only applied to the back and a small portion of the boards and the corners, the book is said to be "half bound." In whole binding a piece of leather is cut sufficiently large to cover the book, and to allow about one inch all round for subsequent turning in. The leather must be carefully pared to a suitable thickness at the edges and also down the middle portion which is to cover the back and joints; the surface is first damped with plain water and then the flesh side receives a fairly thick coat of paste, and is allowed to soak for a short time. If any of the bands are not sharp and true they are corrected by being pinched with band-nippers. The pasted leather now receives additional paste on those portions that have become dry. One side of the book is then laid down upon the leather in its correct position, the leather is drawn over the back and afterwards over the other side. The bands are pinched up with the nippers, and the edges are neatly turned in and the corners mitred. The

fold of leather at the headband is pulled out a little and then pressed into shape with a folder so as to form a headcap.

For half binding a strip of leather is cut about one and a half inches longer than the height of the book, and sufficiently wide to cover the back and a portion of the boards next the back; and four small pieces of leather for the corners are also cut. The leather for a half-bound book is fixed in a similar manner to that for a whole-bound book; the four corners are first pared, pasted and affixed, and then the back is attached. The cloth or other material is subsequently glued or pasted to the sides and neatly turned over the boards.

The book is then "tied up" until the paste has set; this is effected by tying a loop of thread round the volume and then winding the thread round it several times. When thoroughly dry the book is carefully opened and the joints made to work freely. If the book is to have a leather joint it is pasted to the board at this stage. The panel formed by the leather round the four edges of the board is now filled in with a piece of thick paper cut to the required size. The end-papers are then pasted down to the boards, and the volume is ready for finishing.

16. The covers of books are most generally decorated by tooling them in gold or in "blind" (i.e. the impressing of the hot finishing tools on the leather without the application of gold). The tools used for finishing are of metal (usually brass or steel) fixed into wooden handles, and their design is cut in relief; some of them have distinctive names as a *fillet*, a *roll*, a *gouge*, a *pallet*, and a *polishing iron*. A fillet is a wooden-handled tool with a revolving brass wheel, on the circumference of which one or more lines are cut. A roll is similar to a fillet, but has a wider rim on which is engraved an endless design. A pallet is a tool having a straight surface on which lines or other ornaments are cut. A gouge is a tool having a curved line cut on its face. Gouges are made in sets, having arcs of different curvatures. Besides these tools others bearing designs in great variety are used in a bookbinder's shop.

Assuming that the book is to be lettered and decorated elaborately in gold, the finisher's first operation is to work out the design on paper by blacking the tools in the smoke of

a lighted candle, and then impressing them on the paper. The paper pattern is then placed over that portion of the book which it is desired to decorate and attached at the corners with paste, and the design is impressed with heated tools through the paper on to the leather. If the design is not intricate it is impressed directly on to the leather without the aid of the paper pattern. The leather is usually washed over with paste-water, and when dry glaire is applied. Before the glaire is quite dry the leather is rubbed very lightly with a small pad of cotton wool on which is a very small quantity of vaseline or cocoanut oil. Strips of gold leaf are then taken off the cushion with a pad of cotton wool and laid on those parts of the leather which are to be decorated. The tools having been heated at the stove are now impressed on the book, whereby the gold is made to adhere; the superfluous gold is afterwards removed by being rubbed with a piece of soft rubber. If the gold has failed to adhere properly to any portion of the design, fresh glaire and gold are applied and the part is retooled. The cover is now slightly washed with benzine in order to remove all traces of the surface grease which was used for keeping the gold in position before tooling; too much benzine, of course, would affect the leather and make it too dry and consequently brittle. The leather is then polished with a warm polishing iron and afterwards placed in the press between japanned plates or bright smooth tins, and left until the following day, when the book is quite ready for its owner.

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CHAPTER II

MACHINE BOOKBINDING

By Geo. A. Stephen

18. During recent years the introduction of machinery into commercial binderies has completely revolutionized the methods of edition binding. In this class of work hand labour has been almost entirely superseded by a variety of machines constructed for the efficient execution of nearly all processes; the present chapter will, therefore, briefly describe machine bookbinding. For a full description of this important branch of the industry readers are referred to *Commercial Bookbinding*, 1910, by the present writer.

19. The first process in the binding of a book is folding. For this operation numerous machines have been devised for folding sheets into sections; some of them are fed by hand while others have a self-feeding attachment. The sheets may be folded once for a section of four pages, twice for a section of eight pages, and thrice for a section of sixteen pages; other unusual folds may also be made by the machines, and some of them will insert one section within another. The sheets are usually folded into sections of sixteen pages for the general run of books. The number of sheets that can be folded per hour on these machines depends upon the kind of machine and whether it is equipped with an automatic feeder or not; the output varies from about 2,000 to 6,000 sections per hour.

When folding by machinery the whole quantity of the first sheet is usually folded before the second sheet is commenced because the machine must be accurately set for each different sheet. As the sheets are folded into sections it is customary to tie them in compact bundles, and this is generally accomplished with the aid of a bundling press, by which a quantity of the sections can be tied up neatly in bundles while under great pressure.

20. After the sheets have been folded the plates and maps

are placed in their correct position (usually they are tipped—i.e. pasted—to their respective sections) and the end papers are attached to the first and last sections of the book. This work of pasting may now be done neatly by machines which act with surprising rapidity.

21. The next process is "gathering," for which several different machines have been constructed upon similar lines. The essential features of these machines are a series of boxes for holding piles of the sections which are to constitute complete books, a continuous band which travels in front of the boxes, and automatic devices for withdrawing the sections from the boxes and placing them on the travelling band. A complete set of sections is obtained each time a particular portion of the band travels across the machine, and it is only necessary for an assistant to remove the gathered books as they are delivered at one end of the machine. The book must next be collated to see that the sections are in their proper order and that none are misplaced, in duplicate, or missing.

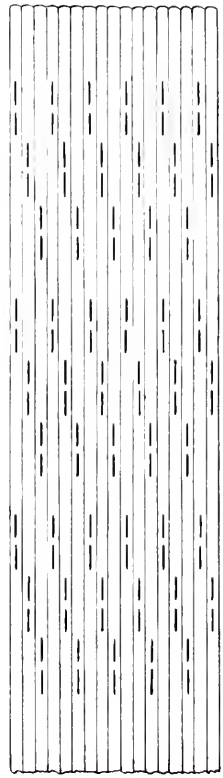
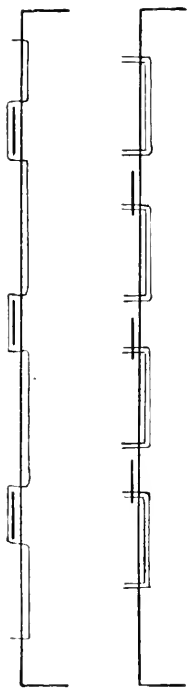


FIG. 9.

22. After being collated the book is ready to be sewn. Books may be sewn either with wire or thread, but in this country the latter material is used for practically all letterpress books. In Germany, however, wire-sewing is a fairly common practice, and there are many wire-sewn books which are quite satisfactory from the points of view of serviceability and flexibility. Baedeker's *Guides* and Brockhaus' *Encyclopædia*, for example, which are sewn on Brehmer's wire book-sewing machine, compare very favourably with books sewn with thread. In wire-sewn books the sections are attached to a common foundation of mull, canvas, or tapes, by staples which are driven through the section (from the inside) and

the back fabric, and then clinched at the back. To prevent undue swelling in the back, which would be caused by the wire if the staples in one section coincided with those in the next, the staples in adjoining sections are inserted in different positions, as shown in Fig. 9. As wire does not yield as readily as thread, wire-sewn books are usually less pliable than books sewn with thread, and therefore wire-sewn books are frequently objected to. The most serious objection to wire-sewn books is due to the use of common wire which rusts in the course of two or three years, and thereby corrodes the paper and back fabric so badly that the sections are seriously damaged and the book falls to pieces. This objection might easily be met by the use of non-rusting wire, such as alumenoid, but its price causes most binders to restrict its use.



A. B.

FIG. 10

23. In this country and in America thread book-sewing machines are used almost exclusively in edition work. There are now several efficient machines on the market, by the use of one or other of which various kinds of sewing may be produced: the sewing may either be on the "all along" or "two sheets on" principle, and it may be plain (or French), over cords, over or through tapes, through mull, or through mull and tapes together.

The principle of machine book-sewing differs fundamentally from hand sewing. With one exception (a Brehmer machine that slits the head and tail of each section) the machines sew inside the sections with double thread, each stitch in a section being formed by an independent thread which passes horizontally along the back of the book; therefore as many independent threads are used for sewing a book on the "all along" principle as there are to be stitches in each section. The two diagrams forming Fig. 10 show the difference between hand sewing on tapes and machine sewing through tapes: diagram A

shows hand sewing, and it will be observed that one continuous thread goes vertically along the whole length of the section; diagram B illustrates machine sewing with four threads. In machine sewing each independent thread is interlooped with itself so as to form a chain stitch—usually called erroneously a kettle-stitch by the makers of the machines.

Machine sewing is advantageous because, as the threads are independent, a section cannot come out of a book until all the stitches in it have been severed. The machine

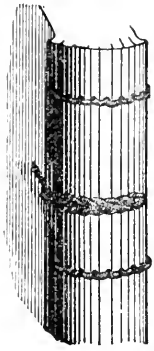


FIG. 11

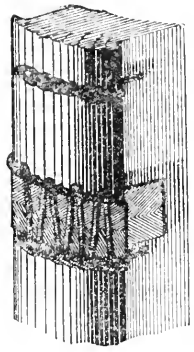


FIG. 12

chain stitch, however, is inferior to the hand-made kettle-stitch in point of strength, as may be seen by a comparison of Figs. 5 and 18 or 20, but the former is quite suitable for edition work.

24. The Smyth book-sewing machines are made in two styles: one style having a four-feed arm for rapid work, and the other having a single-feed arm. All the needles used in the Smyth machines are curved, and their curvature determines the length of the stitch. Illustrations of the various kinds of sewing which may be done on the Smyth machines may be seen at Figs. 11 to 16. Fig. 11 shows the plain "all along" sewing done by the Improved No. 3 Smyth machine, which has four radial arms. Fig. 12 illustrates the work of the same machine when sewing over tape; the tape is held down by an auxiliary thread (called a braiding thread) which

goes over the tape in a zig-zag direction and connects the threads of alternate sections on either side of the tape.

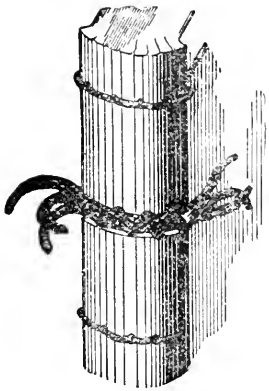


FIG. 13

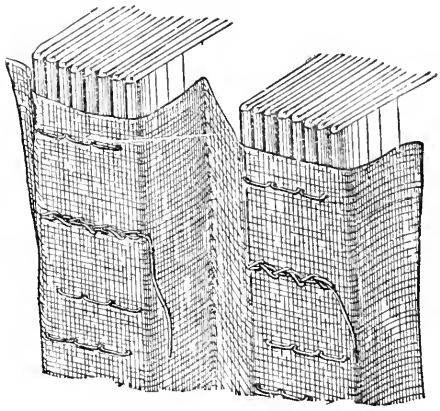


FIG. 14

The "two sheets on" method of sewing over raised or sunken cords done by the No. 7 Smyth machine is illustrated at Fig. 13, and Fig. 14 is a sectional view of two books sewn through mull as they come from this machine, with the sewing thread between them cut, but the mull uncut. Fig. 15 shows the sewing over tape done by a Smyth single arm machine; in this case separate holes have been made for the braiding thread, as illustrated. The method of sewing over cords by this machine is shown at Fig. 16.

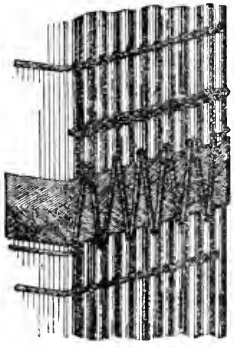


FIG. 15

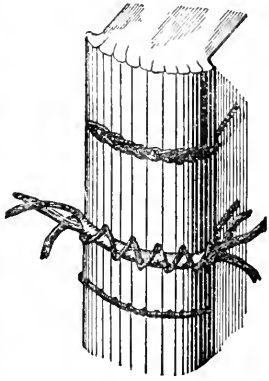


FIG. 16

25. Brehmer's machines are all of the single-arm type. One of them sews with single thread "all along" inside the sections, and unfortunately this necessitates the cutting of the head and tail of each section, as shown in Fig. 17; these slits are made for the purpose of allowing a continuous thread to come out of one section and to enter another in such a manner that the threads will not be cut by the guillotine when the edges of the book are trimmed. In the interest of good binding and of the serviceability of books, this machine should not be used for ordinary edition binding, but only for very thick books, such as Whitaker's *Reference Catalogue*. For such extra-thick books this machine may be usefully employed, because the single thread does not unduly swell the backs of books as a double thread would do. Although the slits need not be made larger than $\frac{1}{4}$ in., bad operators frequently cause them to be made about $\frac{1}{2}$ or even $\frac{3}{4}$ in. in length, thereby injuring the sections and militating against the life of the books.

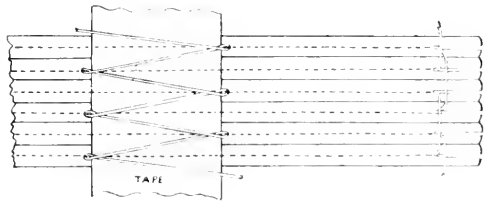


FIG. 17

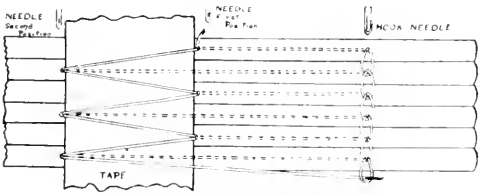


FIG. 18

Three other book-sewing machines are made by Brehmer, and these are much more satisfactory for ordinary edition binding. The needles in these machines are so adapted that the distance between the stitches and also the length of stitch may be varied to suit books of different sizes. Various kinds of sewing may be done on Brehmer's machines. Fig. 18 illustrates the kind of sewing done by one of his machines when

sewing "all along" over tapes, and Fig. 19 illustrates plain sewing done by the same machine when adapted for sewing on the "two sheets on" principle.

26. The Martini National book-sewing machines are also of the single arm type, and are equipped with straight needles. The No. 1 machine only produces stitches $1\frac{1}{8}$ in. in length, but the sewing devices are adjustable in relation to each other, so that the stitches may be brought within proper distance from the head and tail of the book. The No. 2 machine will make stitches of several different lengths. Like other book-sewing machines the Martini machines will produce sewing of various kinds. An illustration (Fig. 20) is

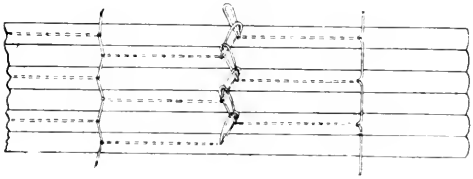


FIG. 19

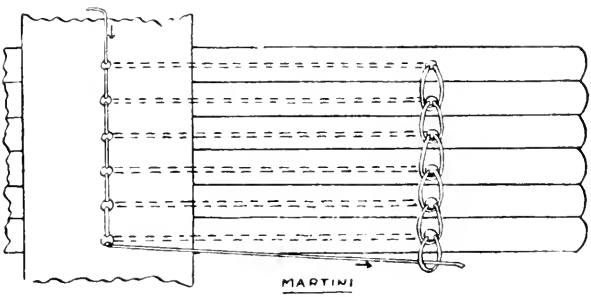


FIG. 20

given of the kind of sewing done by the No. 1 machine when sewing through tape. The No. 2 machine when sewing over tape makes stitches similar to Fig. 18.

The speeds at which the different machines work vary, and the speed of a particular machine will depend to some extent upon the nature of the work being sewn. In a given time a machine will at least sew work equal to that done by five

girls, the average output of the machines varying from about 1,000 to 1,500 sections per hour.

27. The book is taken from the sewing machine to the nipping or smashing machine, which rapidly presses the book and renders it quite compact. The back of the book is then glued to hold the sections together while the cutting of the edges (unless they are to remain uncut) is performed by a cutting machine. The principle upon which most of the guillotines work is the same: the book is correctly placed by means of a gauge on the bed of the machine, a clamp holds it firmly, and a knife descends and cuts an edge. There are numerous cutting machines on the market which are made in several different forms. The simplest form has a descending knife which cuts one edge at a time, so that the books must be placed on the guillotine three times in order to get the head, tail and fore-edge of each cut. Some machines have two knives, and others have three. The "Duplex" trimmer is equipped with two knives, which act simultaneously and automatically, and turn-tables upon which the books are placed back to back. The Seybold, the Oswego, and August Fomm's Continuous Feed Book Trimmers have rotary tables and three knives which act automatically, so that at every single operation a pile of books is delivered having the three edges trimmed. The Mercer Continuous Book Trimming Machine is used for trimming books that are to have deckle-edges; it has a circular knife which cuts off the projecting edges of the leaves as the books are automatically brought into contact with it.

28. The trimmed book is next "glued up" by hand; hot glue is applied to the back and it is worked well in between the sections. Before the glue has become quite dry and hard the book is subjected to the operations of rounding and backing—two important operations which are effected by a rounding and backing machine. The Crawley machine rounds and backs each book by one continuous action, at speeds varying from 350 to 750 books per hour, according to the nature of the work, the size of the machine, and the ability of the operator. The operator simply places the book between a pair of rounding rollers and the machine does the rest of the work. Rounding and backing machines are capable of doing their work in a thorough and effective manner if they have

been set accurately and are manipulated by an intelligent workman, but by carelessness on the part of the operator the folds of the sections may easily be ruined by them.

The book is now ready to receive its back lining. A second coating of glue is applied to the back, and a strip of mull, wide enough to lap over the sides to form hinges, is attached, upon which is put a strip of stout paper; these are rubbed down firmly with a folder or rounded stick. If the edges of the book are to be decorated this process is done as soon as the back is dry. If the book has a gilt top or gilt edges, headbands are usually fixed at both the head and the tail of the book.

29. The next operation is "casing-in"—a term applied to the process of enclosing a book in a book-cover or "case." As a book-cover is finished before it is attached to the book it may be made in another department of the bindery during the operations already mentioned. The methods of attaching the cover of a "bound" book and a "cased" book differ fundamentally. When a book is "bound" the tapes or cords are securely fastened to the boards before the covering material is attached, so that the cover virtually becomes an integral part of the structure of the book. When a book is "cased" paste is applied to either side of the book and the finished cover is simply attached to the sides; thus the book is united to its cover merely by the pasted slips, mull and end-papers.

The making of book-covers or "cases" for editions is now done in all large binderies by machines. The materials used for cloth case-making are strawboards, stout paper or thin boards for stiffening the back, and cloth. The boards are cut to size rapidly by a rotary cutting machine. The two machines largely used for case-making are the Smyth case-maker and the Sheridan case-maker; these differ considerably in their construction and method of operation, but they both automatically glue the cloth, apply the boards and back lining, and turn in the edges of the cloth, thereby making a complete cover.

The Smyth case-maker requires the cloth to be cut into rectangular sheets of the correct size for the cases which are to be made, while for the Sheridan case-maker the ordinary rolls of book cloth must be cut into rolls of a width requisite for the cases. A case made on the Smyth machine may be recog-

nised from one made on the Sheridan machine by the fact that a Smyth case has the cloth first folded over the head and tail and afterwards over the fore-edges, whereas a Sheridan case has the cloth first folded over the fore-edges and afterwards over the head and tail.

The Sheridan case maker is the faster of the two machines, its estimated speed being about 1,000 cases per hour, as against the speeds of the Smyth machine, which vary from 450 to 750 cases per hour. The Smyth machine, however, may be adjusted for making cases of a particular size much more rapidly than the Sheridan machine, which is very complex in its construction, so that the latter is only suitable for very long runs.

30. The book-cover may be lettered with its title, and ornamented in various ways: leather and cloth cases may be embossed, blocked in blind or blocked in gold or alloyed metals, and cloth covers may also be decorated by being printed with inks of various colours, or by a combination of some of these methods. The dies for stamping the covers are usually cut in hardened brass, and the complete design may either be cut on one block or made up of several small blocks. The dies are cut in relief if the covers are to be blocked in blind or in gold, or printed in colour. If the cover is to be printed in two or more colours a block is required for each colour, and each block must be worked separately on the press, unless the colour design is such that the colours may be printed in parallel bands on the cover. If the cover is to be blocked in relief the die must be cut in intaglio and a counter die used in connexion with it. The die is fixed to the upper platen of the blocking press, which may be heated by gas. The cover to be decorated is placed on the lower platen, which is provided with gauges to guide the operator in placing the cover accurately, and it is brought into contact with the die in order to receive its impression. For colour work the die must not be heated, but heat is necessary for blocking. In gold blocking pieces of gold leaf are laid on the cover at the places where the design is required, and after the cover has been stamped by the die the superfluous gold is rubbed off.

31. The work of combining the book with its ready-made cover may be done either by the Smyth casing-in machine or the "Parkside" casing-in machine. The Smyth casing-in machine runs at an estimated speed of about 500 books per

hour, and its *modus operandi* is as follows. After a book has been placed on a radial arm of the machine, two rollers apply paste to either side of the book, a cover is automatically placed over it and forced into the joints, and the sides are pressed before the book is removed by the operator. The "Parkside" machine, which is estimated to run at a speed of 720 books per hour, is constructed very differently. This machine rounds the back of the cover and places it in a position above the book which has meanwhile been fed on to a book-blade, and lowered into the machine to receive a coat of paste on either side from a pair of pasting-plates; as the book ascends it rises into and lifts the cover, and the cased book is then removed by the operator.

The books after being removed from the casing-in machine are conveyed to an hydraulic press in which they are stacked and pressed for several hours. Finally the books receive their wrappers, and they are then ready for delivery to the publisher.

32. From the librarian's point of view the publishers' bindings at the present day are very defective, the average life of a book in a publisher's "case" being about thirty issues. The principal defects of publishers' bindings have been summarised in the present writer's *Commercial Bookbinding* as follows: (1) Sewing too loosely. (2) The use of thread, tape and mull of inferior quality. (3) Sewing with the minimum number of tapes or cords; or, dispensing with the tapes or cords and substituting mull of the flimsiest texture. (4) Fixing the back lining of mull to the book before it has been rounded and backed, and setting the rounding and backing machine inaccurately, thereby rounding the book imperfectly and breaking many of the strands of the mull and the texture of the paper at the folds. (5) Tipping the illustrations with paste instead of either guarding them or printing them on paper sufficiently wide to allow the inner margin to be folded round the adjoining section. (6) The use of inferior glue in glueing up. (7) The cutting of slips of insufficient length. (8) Imperfect casing-in, which may be due to the application of an insufficient quantity of paste at the joints, or not setting the book squarely in its cover. (9) Insufficient pressing immediately after the casing-in operation.

As a result of overtures made by the Binding Committee of

the American Library Association several important American publishers have issued some of their most popular books in a reinforced binding, at an extra cost ranging from two to twenty cents per copy. These reinforced bindings have proved most satisfactory for public libraries; one American librarian has stated that he had observed that several books in such bindings had circulated over one hundred times, and one volume had circulated one hundred and forty-two times, without a single visit to the repair room. The special features of these reinforced bindings are (1) sewing on the "all along" principle with strong thread; (2) sewing on three or more tapes; (3) reinforcing the first and last sections by lining their outer folds with strips of linen; and (4) making the end-papers with cloth joints and sewing them through.

In 1909 the firms of Henry Frowde and Hodder and Stoughton combined for the purpose of publishing a large series of children's books (under the title of the Oxford Books for Children), many of which were issued in a special library binding. The books were bound from the sheets in half pluviusin or quarter pigskin, and their prices were about the same as those of the public library binders who bind books from the sheets. In October of the present year (1910) the publishers of these books made considerable improvements in their special bindings, and they now possess the essential features of serviceable library bindings; the prices are much lower than those of the previous special bindings, and they are also lower than those of the binders who supply books bound from the sheets. The principal features of these bindings are: the books are bound from the sheets; the books are sewn by hand on the "all along" principle, on five tapes; the first and last sections are lined in their folds with jaconet; the illustrations are guarded with jaconet round the adjoining section, and sewn through; the end-papers have linen joints; the books have French joints; flexible glue is used on the backs; the boards are good quality millboards, having blunted corners; the books are boldly lettered in gold on the back with the title and author's name, and neatly finished with blind fillets. The books are obtainable in quarter pigskin or morocco, with sides of legal buckram or imperial morocco cloth, at 4s. 9d. net for a crown 8vo. book published at 6s., and 2s. 5d. net for a book published at 2s.; and in whole legal buckram or imperial

morocco cloth at 4s. 6d. net for a 6s. book, and 2s. 2d. net for a 2s. book.

In the spring of the present year two other British firms, viz. Thomas Nelson and Sons and J. M. Dent and Sons, issued some of their books in reinforced bindings which conform in several respects to the tentative specification of the Library Association's Book Production Committee. Messrs. Thomas Nelson and Sons issued several of their 2s. (net) new novels in a reinforced binding at an extra cost of 6d. per copy. The special features of this binding are: the book is sewn with strong thread on the "all along" principle, on three tapes which are of good length; the first and last sections are lined in their outer folds with linen; the book has linen joints; the cloth is strong and the boards are gray-boards; and the title and author's name are boldly lettered on the back.

Messrs J. M. Dent and Sons issue a special library edition of "Everyman's Library" in two styles: (1) bound in a strong linen-faced cloth at 1s. 6d. net per volume; (2) bound in quarter pigskin at 2s. net per volume. The special features of these bindings are: each book is sewn with strong thread on the "all along" principle, on three strong tapes; the back is rendered flexible by the use of a special glue, and the back lining of mull is of good quality; the end papers are lined with mull, and they are passed round the first two and last two sections of the book; the boards are strong mill-boards; the title and author's name are clearly lettered on the back, and the cover is devoid of ornamentation. The 500 volumes comprising this series include a large number of standard and popular books that frequently require replacement in libraries. The print of these books being quite good, and the paper and binding being serviceable, the books are in every way suitable for replacing worn-out books at small cost; in fact, new books are obtainable at a cost which is little more than the price of binding the old copies.

The production of reinforced bindings is a generous concession on the part of the publishers, as such departures from the usual methods of binding are done at considerable inconvenience. It is, therefore, to be hoped that librarians will encourage in a practical manner those publishers who place on the market books in reinforced bindings, in order that they will be stimulated to adopt more generally a reinforced binding for

their books, and that other publishers will be induced to emulate their example.

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(Reprinted as a pamphlet, 1908; also reprinted in *The Bookbinding Trades Journal*, vol. i, 1904-1909).

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CHAPTER III

LIBRARY BOOKBINDING

By Henry T. Coutts and Geo. A. Stephen

34. In the early days of the craft bindings were chiefly characterized by good materials and careful workmanship, generally combined with elaborate exterior decoration, and the library bookbinding of those days was no exception to this rule, libraries being for the most part the outcome of the zeal of private book-collectors who took a pride in possessing sumptuous bindings.

Present-day library bookbinding, however, is a class *sui generis*; it is distinct from decorative binding on the one hand, and commercial or publishers' binding on the other; it is utilitarian rather than artistic; its worth lies not in the beauty or attractiveness of its cover, but in its strength, durability, and neatness.

There are, of course, certain departures from the general practice. Reference books of considerable value or possessing particular characteristics may be deserving of more beautiful exteriors; but in these instances also durability is of primary importance, and ornamentation and perfection of finish are but supplementary or secondary considerations. From the point of view of library bookbinding, the chief distinction between lending library and reference library books is that while the former must be strongly bound with a view to hard wear, their life is, comparatively speaking, short, whereas the majority of the books in the reference department are intended for permanent preservation; and it does not follow that a binding which is suitable for a short and arduous life will be equally suitable for books that are expected to last for an indefinite period.

35. The essential requisites of library bookbinding are included in the specification given in Chapter VII, but the

principal qualities may be considered here; briefly summarized they are:

(A) Flexibility.
(B) Strength and Durability
(C) Solidity.
(D) Good Materials.
(E) Neatness.
(F) Lightness.
(G) Cheapness.
(H) Suitability of Style.

36. (A) A well-bound book will open and shut easily; it will always open out flat and remain open at any page without assistance, and it will shut up completely and remain closed. The flexibility of the book depends to a large extent upon the manner in which it is sewn, and the method of attaching the book to its cover. Generally speaking the sewing of library books should be on the "all along" principle, and over narrow tapes (about $\frac{1}{4}$ in. wide), four of which should be used for a crown 8vo, and books of larger sizes should have additional tapes in proportion. Valuable reference books for permanent preservation might be "flexibly" sewn (see Fig. 3B) over cords, and consequently have tight backs. Less valuable books, if large and heavy, might have a leather lining sufficiently wide to allow the side overlapping portions to be inserted with the slips between the split boards.

The ordinary method of oversewing is to be deprecated for library books, because the books thus sewn are very inflexible; moreover, this method of sewing causes the paper to tear very easily under the rough treatment which library books receive at the hands of many readers. In the ordinary method of overcasting the books are prepared by having the sections trimmed at the back, thus converting the book into a pile of single leaves. The back edges of the leaves are roughened with the side edge of a saw, and then the back is glued up. When the glue is dry the book is separated into thin sections, each of which is overcast, or over sewn, by passing the needle through and through the side of the section, bringing the needle over after every stitch. With the exception of the first two sections, the two preceding sections as a rule are also sewn through each time a fresh section is sewn; thus each

section contains three times as many stitches as were inserted during the sewing of one section.

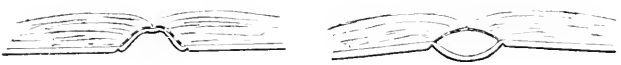
For nearly twenty years Mr A. O. Heyner has adopted a method of sewing which is a great improvement upon the ordinary method of over-sewing, and satisfactorily meets the requirements of cheap books that need to be overcast; the sewing is partly done by a machine that stitches small quantities of single leaves (to form sections) through the side, nearly $\frac{1}{4}$ in. from the back, the sections having been previously provided on either side with a strip of linen.

Mr Cedric Chivers with commendable enterprise has devoted a great deal of attention to the binding of library books, and has effected a number of patent methods connected with library binding. In 1904 he patented a method of overcasting which is a remarkable improvement over the ordinary method. A series of holes is first punched in a slanting direction through the side of each section of leaves by a perforating machine; the holes are generally arranged in three parallel rows in such a manner that the holes are disposed throughout the length of the section alternately in pairs and singly. The thread passes through the lower hole of a pair in one section, then through the single hole opposite thereto (occupying the middle position) of the next section, and finally it passes out at the top hole of the pair opposite in the third section; the thread is then brought over the back and enters the first section again at the lower hole of the first pair, and repeats its passage through the sections; this process is repeated in a fresh set of holes each time until a row is completed, when another section is added, and the sewing is proceeded with in the reverse direction. By this method of sewing each section is directly attached to the two adjacent sections on either side of it.

Even the best methods of overcasting should only be used for books having sections with dilapidated backs, or for books printed on featherweight paper, because no system of overcasting renders books as flexible as those sewn by the ordinary methods, and books once sewn in this manner cannot be subsequently rebound.

37. (B) To ensure strength and durability in a binding, particular attention should be paid to the integrity of the sewing, the strength of the joints, and the quality of the materials. The

strongest and best form of binding for the average library book printed on paper of good quality is generally considered to be the "tight and flexible" back, which is obtained by attaching the book directly to the leather used for the covering; hence the name "tight." The difference between a tight back and a hollow back is illustrated at Fig. 21, A being a tight back, and B being a hollow back. A tight back affords a maximum amount of strength and flexibility because a hinge is formed wherever the book is opened, and, therefore, the strain is distributed over the whole back. The disadvantages of the tight back, however, are that after the book has been subjected to some amount of wear the back frequently assumes a more or less concave appearance (especially noticeable in the case of thick and heavy books), and the gilt lettering on the back becomes somewhat indistinct because of the creases in the



A FIG. 21 B

leather on the back. A further objection to tight backs is that labels cannot be securely attached to them. A tight back imposes too much strain on the paper if it be of a soft, spongy nature, and, therefore, in such a case a "loose" or "hollow" back should be adopted. A book with a hollow back has the outer covering of leather, cloth, or other material attached at the joints and not fastened to the back of the book itself; thus when opening the book the strain is always at the same two places, viz. the joints, and as the leather is usually shaved at the joints to a considerable extent, this form of binding is rendered weaker than the other. The principal advantage of the hollow back is that the shape and smoothness of the back are preserved. Books bound in cloth or buckram must necessarily have hollow backs on account of the stiff nature of the material. In common work it is customary to line such books with mull and brown paper, but in library work it is advisable to substitute a lining of thin leather or canvas. Whether a book have a tight back or a hollow back, the tapes should be firmly inserted between "split" boards. Usually the "split" board is not actually made by partially splitting

one board, but by glueing together a thick and a thin board in a manner that will leave a split at one edge sufficiently large to receive the slips. If, for any particular reason, the book be sewn on cords, it is essential that the cords be laced and hammered down into the boards.

It is an almost universal custom in library binding to strengthen the first and last sections of a book by lining the outer fold of each with a strip of fine linen or jaconet, because these sections are subjected to a greater strain than the others. The book is further strengthened by guarding each end-paper at the hinge portion with a similar strip, which is pasted along one edge of the folded end-paper (which is ultimately pasted down to the board), while the other portion is folded round the adjoining end section, and projects about $\frac{1}{4}$ in. By this means the sewing is made to pass through the linen, and the hinge is thus firmly secured to the book. The question of guarding single leaves, plates, and maps has already been referred to in Section 3. If a book have three or four folding plates they should be mounted on fine linen to preserve them from cracking at the folds, but if the book contain a much larger number of folding plates this method would give the book a clumsy appearance; therefore, if a book contain a large number of folding plates they should either be mounted on mull or bank-note paper, according to the number of plates in the volume.

After sewing a book it is generally necessary to trim the edges in order to give them a presentable appearance and to facilitate the turning of the leaves. From the bibliographical and trade aspects a book if cut down beyond its normal size decreases in value, and to cut down too much is a form of vandalism which is to be strongly condemned. Binders should therefore trim the edges of books to the least possible extent.

The rounding or blunting of the outer corners of the boards is peculiar to library bookbinding. This " rounding " consists of cutting off the sharp corners of the board and slightly rounding them so that the covering material can be turned in more securely, and thus prevent the corners bursting open if subjected to a sharp blow. With blunted corners also there is less likelihood of the boards wearing through the material.

What are known as " French joints " are generally used for

library books because they allow a thicker piece of leather to be used for covering than would be possible or desirable with an ordinary joint, and they also prevent the concentration of the creasing of the leather at one point. By permission, the illustrations in the Royal Society of Arts' Report showing the advantages of a French joint over an ordinary joint are given herein (*see* Fig. 22). The upper illustration of a section of an ordinary joint with the board open shows that the creasing of the leather is concentrated on one line; the lower illustration of a French joint shows how this creasing is distributed over a

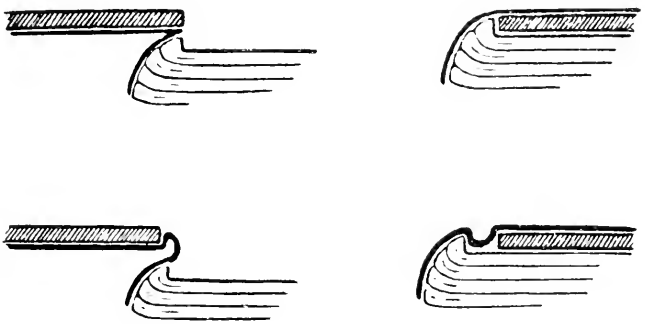


FIG. 22

greater surface, and so enables sufficient flexibility to be obtained with much thicker leather than can be used with an ordinary joint. It will be observed that a French joint is obtained by keeping the boards a short distance (about $\frac{1}{8}$ in.) from the back of the book, instead of bringing them close up to the back.

38. (C) A book when bound should be quite compact and not loose; a "solid" book will last longer and remain cleaner than a "loose" book.

(D) Cheap inferior qualities of any material should be strictly avoided; it is essential that all the materials employed, thread, tapes, cords, paste, glue, boards, cloth, leather, etc., should be of good quality. Information concerning materials is given in the following chapter.

(E) Attention has already been directed to the utilitarian nature of library binding, and the desirability for neatness.

Although neatness is not to be confounded with plainness, the general class of library book should be plainly finished, the back being briefly lettered in gold, and merely filleted in blind. The better class of work, to be found in the reference library, may be more fully decorated, but meretricious ornamentation should be carefully avoided. The full titles of most books are too long to allow of their being lettered on the backs; therefore the wording for the brief title should be carefully chosen, and entered on the binding sheet or slip, whichever is used; the wording should not be left to the discretion of the binder, as there are many pitfalls for the unwary.

As Mr Spofford points out in his *Book for all Readers*, carelessness has resulted in many libraries being "filled with wrongly lettered books, misleading titles, and blunders as ludicrous as they are distressing." He quotes as an instance of the absurd in lettering the case of "an elegant black-letter edition of a Latin classic, which was printed without title-page, like most fifteenth century books, and began at the top of the first leaf, in large letters: 'HOC INCIPIT,' signifying 'This begins,' followed by the title or subject of the book. The wiseacre who owned it had the book richly bound, and directed it to be lettered on the back: 'Works of Hoc Incipit, Rome, 1490.'"

The more common of the mistakes of this kind are treating the series title as the main title; putting the volume number and not the year (or vice versa) on bound periodicals; modernizing old or characteristic spelling which appears on the title-page; giving prominence to minor words in the titles of foreign works, and excluding essential ones; and stamping the editor's or translator's name instead of that of the author. The specimen on the opposite page, copied from the title-page of a modern edition of Camoëns *Lusiad*, will show that great care is necessary in order to avoid the last mentioned error.

Again, in the instance of musical works, the composer of the music, and not the writer of the words, should invariably appear as the author. Thus, "Scenes from the Song of Hiawatha," by H. W. Longfellow, set to music by S. Coleridge-Taylor would be lettered "Hiawatha. Coleridge-Taylor."

(F) The weight of the boards and other materials should be appropriate to the weight of the book itself.

(G) The rate limit of British libraries necessitates the

strictest economy being practised in the administration of every department of a library. The large number of defective books (from a physical point of view) that are now published imposes a severe strain on the funds available for binding;

THE LUSIAD

OR

THE DISCOVERY OF INDIA

AN EPIC POEM

TRANSLATED FROM THE PORTUGUESE OF LUIS DE CAMOËNS

WITH A LIFE OF THE POET

BY

WILLIAM JULIUS MICKLE

FIFTH EDITION, REVISED

BY

E. RICHMOND HODGES, M.C.P.

therefore, of necessity, library bindings must be cheap, but such cheapness must be compatible with durability and true economy.

39. (II) It is obvious even to the casual observer of library binding that a binding should be decided upon after the consideration of its fitness for the book. One detailed specification is not equally suitable for all books; each book must be judged

on its own physical merits or demerits, if the best results are to be obtained. Before deciding on a style of binding for a particular book one has to consider its physical condition, size, popularity, value, and any special characteristics it may possess. These several qualifying factors must be judged in their relationship one to another, and it is impossible in the space at our disposal to deal with each case that is likely to arise. The following suggestions, therefore, are general rather than specific.

40. THE CONDITION OF THE BOOK, i.e., the quality of the paper and its physical condition, to a great extent qualifies the style of the binding. It is obviously futile to bind a book in an expensive durable binding which is calculated to stand hard wear and tear for six or seven years, when the book itself will, in all probability, last only for about eighteen months.

41. THE SIZE AND WEIGHT OF A BOOK materially affect its binding. Generally speaking, a large or heavy quarto or folio printed on good paper that is likely to be much used, needs a very strong binding and a stout covering material; if a thin material be used for the back the weight of the book will pull on the back, causing an objectionable concave form, and putting a great strain upon the sewing and consequently upon the paper.

42. POPULARITY. The number of times a book is likely to be handled, and the question as to whether or not it is intended for permanent preservation, should, to a large extent, determine the character of the binding. So far as the popularity of books is concerned, they may be grouped into four broad classes:

(A) *Books occasionally required.* These are bound chiefly for appearance sake, and, therefore, the smaller books may be suitably bound in cloth, and the larger and heavier in buckram. Folios should have leather backs.

(B) *Books in constant demand, but of ephemeral interest.* This class requires a covering material that possesses hard-wearing qualities for the few years the volumes will be in circulation.

(C) *Books in constant demand and of more permanent interest.* These books naturally require the strongest binding possible, and the covering material selected

should be both mechanically strong, and of a durable nature from the point of view of time.

(D) *Books of intrinsic value.* Editions de luxe and valuable reference books deserve a more elegant binding than the usual public library binding, in order that their exteriors should be in keeping with the general worth of the books; therefore the bindings of such books should be most carefully executed, the leather should be of the best quality, and they should be nicely finished.

43. OUT-OF-DATE EDITIONS of scientific, technical and topographical works, or works whose value depends upon the up-to-dateness of their information, should be replaced whenever possible by new editions, and not rebound.

44. SPECIAL CHARACTERISTICS. Books possessing special characteristics must be dealt with according to their special requirements. As a general rule, old books possessing characteristic bindings should be skilfully repaired in lieu of binding. In some cases where the leather has broken away at the joints the books can be restored by carefully removing the old back, rebacking the volume, and then pasting on the old back again, thus obtaining the strength of a new binding while preserving the style and character of the old one.

Part music for orchestral purposes also demands special treatment. In this instance the various parts or scores which collectively form one work necessitate being bound separately for the convenience of the several musicians. The section allotted to the primary instrument is generally thick enough to be bound in the ordinary way. Frequently the complementary parts, if for duets, trios or quartettes, may be bound in limp covers, lettered on the side, and inserted in a pocket on the inside of the back board of the main part of the work, provision having been made in the back to allow of such insertion. If, however, the complementary parts are numerous, or if each forms a volume of fair thickness, they should be bound separately.

Foreign books also have peculiarities in style of binding which it may be considered desirable to copy. The majority of such works are issued in paper wrappers, which, in some libraries, are used as patterns of style, lettering, etc. The practical purpose of showing the language of a book may be served by indicating the text immediately under the title, thus:

MICHEL STROGOFF

[French text]

Before binding a book it is the general custom for bookbinders to throw out the "waste," i.e., the paper covers (if any), advertisement sheets, etc. The covers and advertisement sheets, however, of many periodical publications,—particularly the journals of Societies and other publications of a technical or specialized nature—often contain information of considerable value which is not given elsewhere in the book; for this reason it is frequently most desirable that such information should be preserved, and, therefore, the covers and advertisement sheets may be conveniently bound in at the end of the book.

45. BINDING DIRECTLY FROM PUBLISHERS' SHEETS. There is considerable diversity of opinion amongst librarians and public library binders as to the advisability of having books properly "bound" as distinct from "cased" before subjecting them to wear. Mr J. C. Dana, in the introduction to his *Notes on Bookbinding for Libraries* draws attention to the scarcity of detailed information respecting the wear of books, and gives figures showing the first cost of books, the cost of a first and second rebinding, and the times lent before and after rebinding. From these figures he deduces that it is more economical to have books bound directly from the publishers' sheets. The principal objection to binding books from the sheets lies in the fact that there are comparatively few books published, the popularity of which can be so estimated as to justify the expense such a binding would incur. Another factor to be considered is that the paper on which so many books are printed at the present time is unfortunately so poor in quality that there is more danger of the book falling to pieces than the cover which protects it; therefore it would be fallacious to order such books to be bound from the sheets in a durable library binding. A librarian usually orders a large proportion of fictional works without actually seeing the books; if he were to order all such books to be bound from the sheets he would wastefully spend a great deal of money on binding, unless he obtained the services of a binder to whom he could give a free hand to bind the books in the manner he chose, or who would advise the purchase of books in original

covers when he deemed such a course more economical to the library.

By purchasing a book in the publishers' binding and allowing it to circulate as many times as possible without the sections becoming spoiled, and then rebinding the book, if such be deemed advisable, one obtains the advantage of getting two clean covers for the book. While it may be economical to have some books of assured popularity bound from the sheets in a durable library binding, in the opinion of the writers it is not advisable or economical to purchase the vast majority of books in an expensive binding.

Those who advocate the binding of new books from the sheets urge that this method prevents the books being withdrawn from circulation while they are most in demand; these persons, however, overlook the fact that such books do not find their way into the library until about a month after publication, which is the time they are *most* in demand.

As each perforation in the fold of a section weakens the paper, it is desirable that no unnecessary holes should exist. When books are rebound it is frequently impossible in sewing to use the holes made in the previous sewing, and, therefore, books bound from the sheets are advantageous in this respect, provided the books are really bound from the *sheets*; it not unfrequently happens, however, that binders are unable to obtain from the publishers books in new sheets, and they simply receive sewn books from which the publishers' covers have been stripped.

While it is true that in certain cases it would be an ultimate saving of trouble and money to bind books strongly in the first instance, it must also be admitted that there are numbers of books, intermittently issued, which last for years in their original publishers' bindings, and others printed upon paper which is so bad that a strong binding would be almost entirely wasted.

An examination of a large quantity of books withdrawn from several public libraries showed that in some instances the publishers' covers were sufficiently durable to survive the paper; therefore, if these books had had a strong library binding the money thus expended would have been thrown away. The issues of this class of book ranged from about twenty to eighty times, the average being fifty-five issues. Similar books

bound in the first instance, at an extra cost of about one shilling, gave little, if any, better results. Several of the books so bound, on account of the poor quality of the paper, were found broken at the sections after circulating from forty to sixty times. The comparison of a number of books recently withdrawn as being worn out showed the average circulation of books bound from the sheets to be 190, and that of books purchased in publishers' covers and afterwards bound, to be 175. Another comparison—the books being arranged in groups according to publisher, series, and price—resulted in an average of 176 issues per book bound from the sheets, and 171 per book purchased in the ordinary way and afterwards bound. In the first instance the actual cost worked out at one penny for 3·30 issues, while the latter resulted in 3·93 issues per penny. Comparisons are proverbially odious; yet it cannot be denied that, regarding the matter from a pecuniary point of view, binding books from the sheets is frequently the more expensive method. The cost of binding a book from the sheets is at least several pence more than the combined cost of purchasing a book new in the publishers' cover and subsequently binding it; in the case of a book published at 6s. the excess would be between 5d. and 8d. Another point which should not be overlooked is the fact that many libraries purchase on very advantageous terms review copies, or secondhand copies withdrawn from circulating libraries; the cost of such books, plus the cost of subsequent binding, frequently works out at about half the price of binding from the sheets.

The expenditure of time in handling books during rebinding is quoted by Mr J. C. Dana as an argument in favour of having books strongly bound "once and for all," as the binding of books from the sheets is sometimes termed. This is a factor of the question not to be overlooked or to be depreciated, but at the same time it must be remembered that if books are bound in the first instance there is a loss of time (probably a month) before such books appear on the shelves. A solution of the difficulty would be obtained if publishers generally could be induced to issue copies of their books on good paper in a reinforced library binding, as suggested in Section 32, simultaneously with their counterparts for ordinary private use.

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CHAPTER IV

MATERIALS

By Geo. A. Stephen

47. Bookbinders at one time or another have taken full advantage of the vast resources of Nature to provide covering materials for books. The skins of most animals, including that of the *genus homo*, have been brought into service for book-covers, as well as wood, metals, ivory, tortoise-shell, mother-of-pearl, velvet, silk, and other fabrics. Most of these materials, however, chiefly concern the amateur and the antiquary, leathers and cloths being the principal materials which belong to the domain of the librarian.

48. The strength and flexibility of leather, and the nice surface it affords for ornamentation, have led the bookbinder to use the words of the shoemaker and say "there is nothing like leather." It is common knowledge, however, that the leather on a very large number of books in public libraries that were bound during the second half of the nineteenth century has utterly perished. It was obvious that this decay was not due to legitimate wear and tear of the bindings, but to other unknown causes. With the objects of ascertaining why modern leather bindings decay, and of indicating the best methods of preparing leather for bookbinding, the Royal Society of Arts appointed a Committee of experts in 1900. This Committee made extensive and important investigations concerning these matters, and in July, 1901, they published a preliminary report; this report was subsequently amplified, and in 1905 it was published with coloured plates and other illustrations, and samples of leather prepared in accordance with the conclusions of the Committee's Report. One of the Sub-Committees "satisfied themselves that books bound during the last eighty or one hundred years showed far greater evidence of deterioration than those of an earlier date. Many recent bindings showed evidence of decay after so short a

period as ten or even five years." This Report should be carefully studied by all persons interested in good bookbinding because it contains valuable information regarding the deterioration of leather bindings, the preparation of leather for bookbinding, hints to owners and keepers of libraries, and the fading of colour from dyed leathers, as well as specifications for binding books.

The chief causes of the decay of modern leather bindings are clearly set out by Dr J. Gordon Parker, in his contribution to the useful work, *Leather for Libraries*, as follows:

1. The introduction of tanning materials other than oak and sumach, stronger in tannin, and more rapid in their action. Many of these tanning materials are unstable, and the leather produced disintegrates on exposure to light and air.
2. The use of dried and cured skins of variable soundness imported from abroad. Goat, calf, and sheep skins are imported into this country from all over the world; some are simply dried in the sun, some salted, whilst others are cured with various ingredients.
3. The use of infusions of acids and other bleaching agents to produce bright and even shades of colour.
4. The use of sulphuric or other mineral acids for the purpose of developing the depth of colour during the process of dyeing.
5. The shaving and splitting of skins for producing an even substance.
6. Printing and embossing grains upon leather, together with other methods of finishing now in common use.
7. The stripping, scouring, souring, and re-tanning of East India leathers (Persians).
8. The removal of the natural grease or nourishment of the skin.

Other factors in the deterioration of leather bindings are (a) gas fumes, because of the sulphuric acid they contain, which has a disintegrating effect on leather; (b) damp, because it encourages the growth of mildew; (c), tobacco smoke (of which ammonia is one of its ingredients), because it has a darkening and deleterious effect on leather; (d) daylight, more especially direct sunlight; (e) excessive dryness of the atmo-

sphere; (f) the wetting and stretching of the leather in covering; (g) the use of oxalic acid or vinegar by bookbinders for washing the leather; (h) the use of "hollow backs"; (i) sewing on too few or too thin cords, or not lacing them into the boards; (j) injurious decoctions erroneously applied as preservatives to bindings.

By taking full cognisance of the deleterious agencies which it is now known affect leather bindings, librarians can do much to mitigate the evils. Librarians should pay great attention to the proper ventilation of their libraries—especially top ventilation, as books stored on the upper shelves of a room are naturally most subject to excessive dry heat. The temperature must not be too high, as leathers do not like warmth, and in buildings heated by hot air or a system of pipes, care should be taken to prevent the air from becoming too dry. Where possible, valuable books should be kept in tightly fitting glass cases, as the Royal Society of Arts' Report remarks that these are conducive to the preservation of books.

49. If preservatives be applied to bindings it should be done only with preparations that are definitely known by experience to be quite harmless, or are recommended by authorities competent to give advice. Glaire, vaseline, and paraffin wax dissolved in benzine, are all regarded as harmless in the Royal Society of Arts' Report. Furniture polish has been advocated by some persons as a preservative, but Dr J. Gordon Parker has condemned its use because it generally contains turpentine, which has a detrimental effect on leather. This eminent authority, when delivering an excellent series of lectures on leather at the London County Council Central School of Arts and Crafts in 1910, stated that leather can be livened up without harm by giving it a slight coating of egg yolk and oil, or egg yolk and pure soap mixed up to a thin frothy emulsion, once every five or seven years. He also stated that Lanoline, which is sheep's fat and is the most natural fat that exists, is an extremely good substance, but as sold at present it is too thick for immediate use on leather, and therefore it should be made into a thin solution by adding a small quantity of water.

50. The various materials most generally used for bookbinding may now be described.

PIGSKIN, or, as it is sometimes termed, HOGSKIN, is a very durable and good leather by reason of its coarse tough fibres.

Pigskin has a fairly smooth, hard surface, characterised by hair scars. Sample A is a specimen of the pigskin manufactured by Messrs E. & J. Richardson, of Newcastle-on-Tyne. If properly manufactured, pigskin, for tensile strength, for durability, and for frictional wear, is probably one of the strongest skins for bookbinding. The Report of the Royal Society of Arts' Committee states: "Of the old leathers (fifteenth and sixteenth centuries) white pigskin, probably alum tanned, has proved to be by far the most durable, but its excessive hardness and want of flexibility renders this leather, as prepared at that time, unfit for most modern work." . . . "Modern pigskin, if genuine, seems to have lasted very well when in an undyed condition; but some coloured pigskin bindings were found to have utterly perished."

By reason of the undoubted strength and durability of pigskin, librarians are sometimes prone to recommend its use indiscriminately for the binding of library books. In order, however, to get the full advantages of pigskin it is essential that the skin be not pared down, because it is the fleshy part of the skin which is tough and fibrous, while the surface or grain part is exceptionally cartilaginous. The use of this hard and tough leather, therefore, should usually be confined to large and heavy volumes. As a rule, before pigskin can be used on small volumes it must be shaved to such an extent that the toughest part is removed.

51. True Morocco leather is goatskin tanned with sumach and dyed. It owes its appellation to the fact that it was originally brought from Morocco; it was afterwards brought from other parts of the Barbary Coast and from the Levant, whence comes another name for goatskin of beautiful appearance, "Levant Morocco." The finest goatskins now come from the Cape of Good Hope, and when finished are known as "Levant Cape Goat." When the grain of Levant morocco is crushed until the surface becomes smooth and polished it is known as "Crushed Levant." Switzerland and Germany supply large quantities of goatskins of good quality, which skins are used to a large extent for art bindings, being principally finished "bright" with a straight grain. Goatskin has a much coarser surface than sheepskin, its fibres are longer, and it is one of the strongest skins used for bookbinding.

Messrs E. & J. Richardson, who specialize in acid-free leathers for bookbinding, produce what are termed Oasis Moroccos, of which sample B is a specimen. These are genuine African goat or antelope skins of originally pure tannage, which, after the arrival of the skins in this country, is enriched by a sumach dressing. These skins are not dyed in light or delicate colours, but in serviceable shades, and special attention is given to fastness of colour to light. The skins are guaranteed to be free from all injurious acids, and as their price is moderate, being as cheap or cheaper than Persians, they provide a very satisfactory material for the cheaper class of bookbinding.

Each of the leathers used for bookbinding has its own characteristic natural grain, which may be accentuated by graining. Morocco leather is distinguished by the numerous small prominences and depressions on the surface of the skin, and the variation in the size of these when the leather is finished provides "bold grains" or "fine grains," or intermediate varieties. The final size of the grain, of course, depends upon the thickness and flexibility of the skin, and the manner in which it is grained.

The graining of leather by hand is effected by pushing or pulling a fold in the skin with the aid of a flat piece of cork which grips that portion of the skin with which it is in contact. The method of graining a skin determines whether it shall be a "straight grain," a "cross grain," or a "long grain," etc. While graining does not increase the toughness of the leather, it renders it pliable and supple, and also enhances its appearance. The beautiful appearance of a bold grain inclines one to choose a skin having such grain, but it should be remembered that the large grains tend to provide receptacles for harbouring dust and bacilli—agencies that considerably shorten the life of a binding. It will generally be found that small grained, or comparatively small-grained morocco will best meet the requirements of library bindings.

Regarding the durability of morocco the Royal Society of Arts' Committee reported: "From the sixteenth towards the end of the eighteenth century specimens of red morocco were found to be in good condition. Of all the leather noticed, this seemed to be least changed by the various conditions to which it had been subjected. It retained its flexibility and colour

to a remarkable extent, keeping a hard surface that was not easily damaged by friction. In the opinion of the Sub-Committee, most of this leather was tanned with sumach or some closely allied tanning material." . . . "The morocco bindings seem to have been fairly good until about 1860, but after that date very many have become utterly rotten, showing signs of red decay, or of the grain peeling off at the slightest friction." Moroccos tanned in accordance with the recommendations of the Royal Society of Arts, and dressed free of all injurious acids would not so decay.

52. The skin of SEAL, a carnivorous mammal, which is tanned with a pyrogallol tannage for bookbinding leather is that of the "blue-back" or rough-haired seal; the skin of the fur seal being too valuable and too much in demand for wearing apparel to be tanned as leather. The mammal which furnishes the skins for bookbinding is the Arctic or Greenland seal which abounds off North America and the northern coasts of Europe.

Sealskin has strong tough fibres which make it a strong leather, capable of resisting hard rubbing wear; its toughness is at least equal to the best goat, while its suppleness is superior to that excellent leather, inasmuch as it contains a good quantity of natural oil. It is very agreeable to the touch, and the grain has a unique lustre which enhances the appearance of the leather. Sample C is a specimen of the sealskin manufactured by Messrs E. & J. Richardson.

Sealskin is very economical in use, as practically the whole skin possesses the same texture, there being no drawbacks of soft flanky or belly parts as in goat. There is some difficulty in obtaining a good supply of undamaged skins, but the price of seal is below that of the best grades of morocco. Sealskin has not yet been put to a sufficiently long test in point of time to determine its durability with any degree of exactitude, but it is believed that it will prove itself to be excellent in this respect.

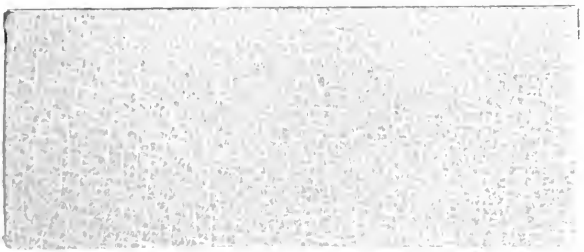
53. East Indian goat and sheep skins, after being tanned, are largely imported into this country and are popularly known as PERSIANS. Many of the skins are from animals that have been cross-bred. They are roughly tanned by the natives with turwar bark, a tanning material belonging to the catechol group which is strongly condemned by the Royal So-

ciety of Arts' Committee. The report states: "East Indian or 'Persian' tanned sheep and goat skins, which are suitable for many purposes, and are now used largely for cheap bookbinding purposes, are considered extremely bad. Books bound in these materials have been found to show signs of decay in less than twelve months, and the Sub-Committee are inclined to believe that no book bound in these leathers, exposed on a shelf to sunlight or gas fumes, can ever be expected to last more than five or six years."

After the skins arrive in this country they are detanned in order to get rid of the turwar bark tanning, in which process the natural grease is removed, and they are bleached by being treated with sulphuric acid. They are subsequently retanned in sumach, or a combination of sumach and oak, and dyed in the ordinary way, frequently with the addition of acid to the dye-bath.

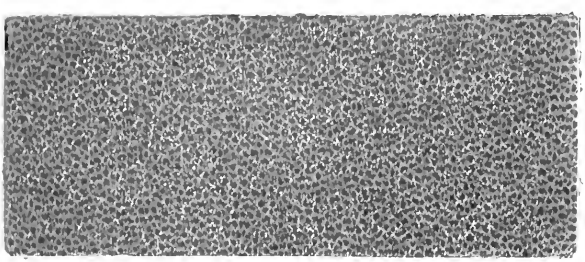
PERSIAN MOROCCO is a mechanically strong and useful leather, made of the skin of a small hardy goat abounding in Persia and the East Indies. The term PERSIAN CALF is a misnomer, as this leather is made from the skins of the hardy mountain sheep of Persia and the East Indies; the skins merely resemble calf by their smooth surface. The bad tanning of these Persian skins is greatly to be deplored because the skins are tough. Although Persians must on no account be used for books intended for permanent preservation, they may be usefully employed for the binding of lending library books which will be subjected to hard wear and are, as a consequence, only expected to last for a few years. The grease that is imparted to the leather by the handling of the books tends to preserve the leather.

54. SHEEPSKIN properly tanned would make a very useful leather for certain classes of books intended for preservation without hard wear, as it is the most flexible of the skins used for bookbinding, due to its loose, open texture; the fibres, however, are very fine and their tensile strength is not very great. Its durability is testified by the good condition of books bound in this material about a century ago. Sheepskins are obtained from all parts of the world, and they vary in quality and durability. There is a great difference between the skins of the hardy Scotch, Welsh, or other mountain sheep and the sleek, well-fed and securely stabled sheep of the plain;



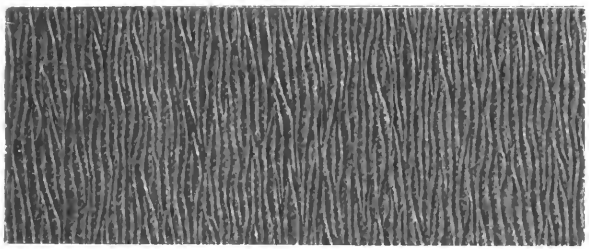
A. PIG.

B. OASIS MOROCCO.



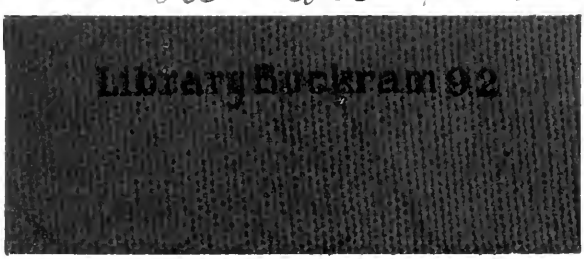
C. SEAL.

Whites - - - - N.N. 413



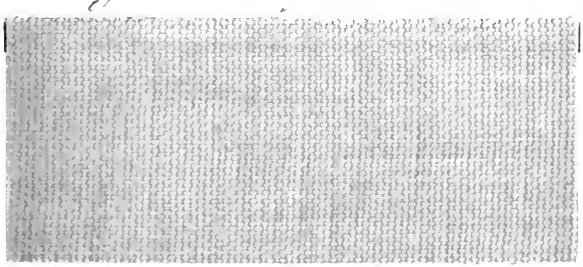
D. IMPERIAL MOROCCO CLOTH.

Kollerston Mills



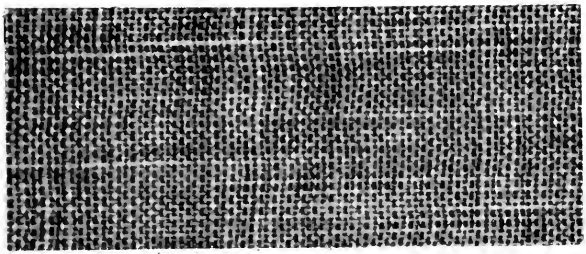
E. LIBRARY BUCKRAM.

J Bancroft & Sons Wilmington Del.



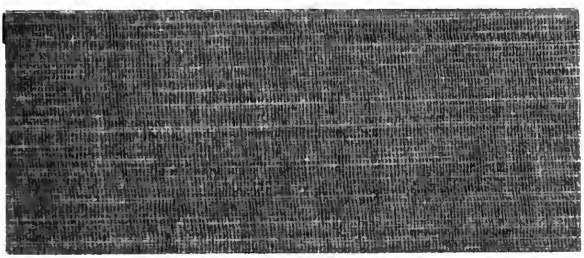
F. LEGAL BUCKRAM.

Bancroft



G. BUCKRAM.

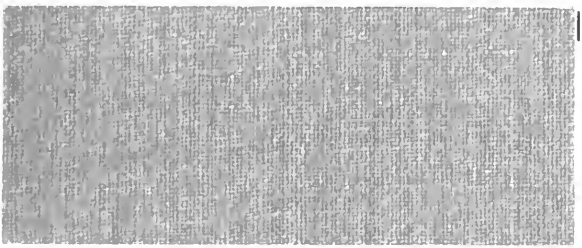
Bancroft



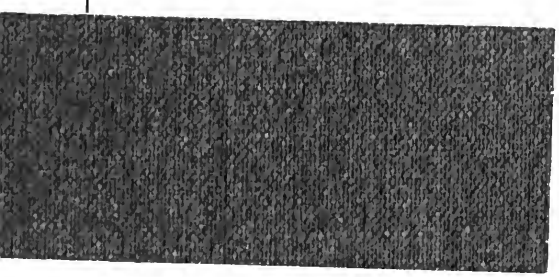
H. LINEN FINISH.

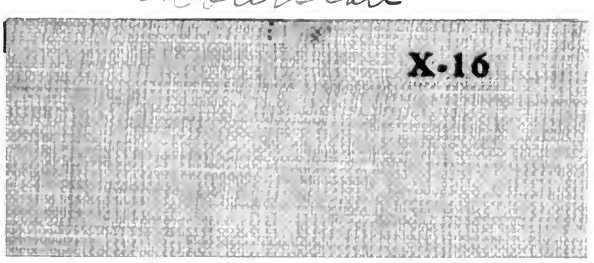
Bancroft

J. OXFORD CLOTH.

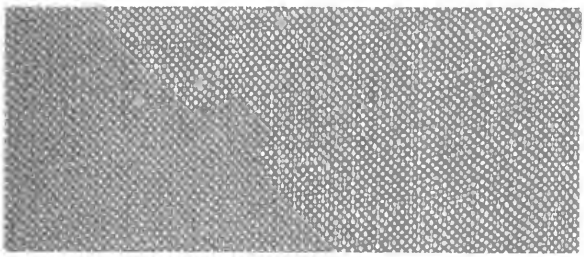


K. ART LINEN.



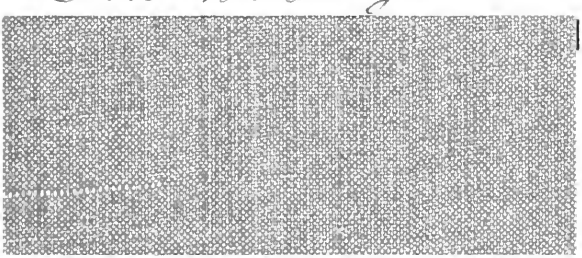


M. ART VELLUM.



N. ART VELLUM.

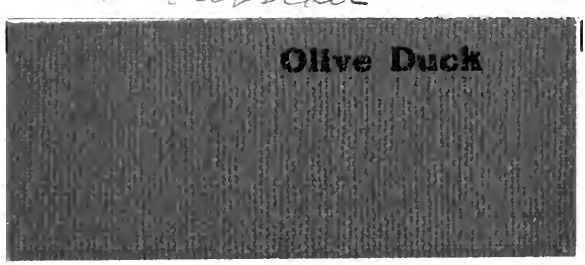
O. ART VELLUM.



P. ART VELLUM.

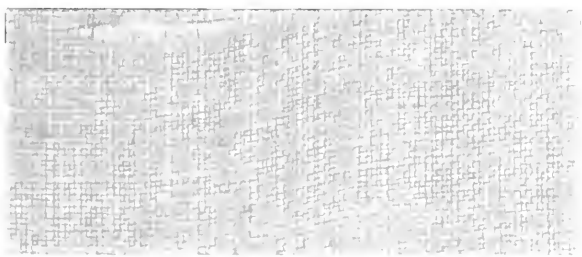
Q. WINVIS BRAND.

R. "SKIVER."

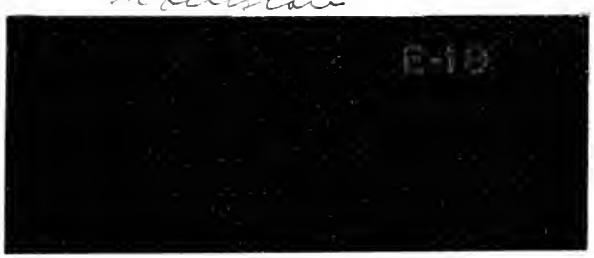


S. DUCK.

T. BUCKRAM.



U. BUCKRAM.

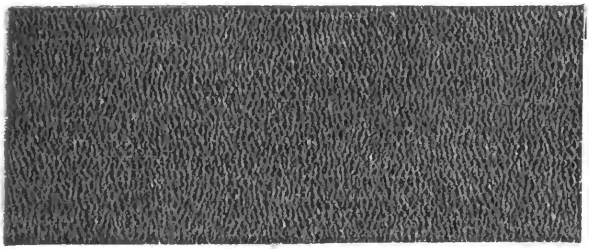


V. BUCKRAM.

British Leather Cloth Mfg Co Ltd.

PLATE VIII.

L/2 1 Sh 2 d 36 wide



W. REXINE. L 12

48" wide 4 Sh 3 d

X. REXINE. L 17

1 Sh 9 d 36" wide

Y. PLUVIUSIN

British Pluvrusin Co Ltd

the fibre of the latter is much looser, and the leather consequently less tough. As a general rule it may be stated that the higher the class of the wool on a sheep the worse the skin will be from a leather manufacturer's standpoint. If subject to much wear sheepskin soon presents a shabby appearance.

Modern sheepskin is generally rendered quite worthless by the objectionable practice of embossing or printing the leather to give it an artificial grain in imitation of the characteristic grain of morocco, or other of the finer or more expensive leathers. This "faking" has a very injurious effect on the leather, greatly impairing its strength and durability; therefore it is essential that no leather should be purchased which is not correctly described. Regarding this matter the Royal Society of Arts' Report states: "Since about 1860 sheepskin as sheepskin is hardly to be found. Sheepskins are grained in imitation of other leathers, and these imitation-grained leathers are generally found to be in a worse condition than any of the other bindings, except, perhaps, some of the very thin calfskin."

Sheepskins are tanned in different ways and with various tannins. Sheepskin when tanned in oak or larch bark is generally known as BASIL, or bazil—apparently a corruption of the French *basane*. It is distinguished from ROAN, which is a soft and flexible sheepskin tanned in sumach, and stained or coloured.

When sheepskin is split, the upper or grain side is known as a "skiver," or a "grain," while the under or fleshy side is called a "flesh"; the latter after being dressed is dignified by the name of chamois or suede. Skivers have very little strength as their fibrous structure is destroyed in the splitting operation. Skivers are generally finished by "printing." "Paste Grains" are skivers which have been "pasted" on the flesh side with a size of glue jelly. Skivers are utterly useless for library bindings as their strength is little better than that of tough paper.

55. The term VELLUM (derived from *vitulus*, a calf) is properly applicable to calfskin prepared by long exposure in lime, and afterwards scraped and rubbed smooth with a flat piece of pumice-stone; but the term is sometimes applied to the skins of goats and kids similarly prepared. The best vellum is now made from the skins of white calves which come principally

from Denmark. Of all skins used for bookbinding, vellum probably offers the greatest resistance both to actual strain and the action of chemicals. The Royal Society of Arts' Report, however, points out that vellum is affected by atmospheric changes—heat and moisture cause it to warp and cockle—and it is much affected by light, under the effect of which it sometimes becomes as brittle as an egg-shell. If kept in a suitable dark place vellum will be found to be exceedingly durable. It has additional advantages to commend its use for certain classes of work: it does not hold dust, and it may be easily cleaned without injury to itself. Because of its rigid nature, vellum is, perhaps, less adapted for book-joints than other leathers, but it is specially valuable for the corners of books, and deserves to be used extensively for this purpose, as it is harder and firmer than any other skin used for bookbinding.

PARCHMENT is similar to Vellum, but thinner in substance. It is chiefly made of sheepskins, but those of goats and young calves are also used. VEGETABLE PARCHMENT, or PARCHMENT PAPER is prepared from ordinary unsized paper by dipping it for a few seconds in a solution consisting of one part of water and two parts of sulphuric acid (this liquid being at a temperature of about 60° Fahr.), after which it is washed in cold water, and dipped into a weak solution of ammonia to remove the traces of the acid.

56. CALF, made from the skin of the young of the cow, has long been a favourite leather for elegant bindings, where strength is a secondary consideration, because of its beautiful and delicate appearance when carefully finished. On account of their freedom from grain defects, calfskins are very suitable for finishing in delicate shades of colour. The best modern calf for bookbinding is prepared by tanning in oak bark or sumach, but oak bark is not such a good tannage as sumach. During recent years calf has come into disrepute, chiefly because of the detrimental processes by which the smooth grain is obtained. Its smooth surface is a decided drawback, so far as hard wear is concerned, as the least scratch or injury becomes very apparent.

Calf, like the skins of other immature animals, is not durable, even when prepared with care, because the fibres are not fully developed. The old calf was more durable than that

made in recent years, but apparently its lasting qualities were not great. "During the latter part of the eighteenth century," says the Royal Society of Arts' Report, "it became customary to pare down calf until it was as thin as paper. Since about 1830 hardly any real sound calf seems to have been used, as, whether thick or thin, it appears generally to have perished." Calf bindings generally lose their suppleness in a few years, and they crumble away at the joints and backs exposed to the atmosphere. Calf is, therefore, not a desirable leather for library bindings.

The ingenious method of applying acids and water to calf to obtain the conventional imitation of the trunk and branches of a tree (hence the term "tree calf"), or the vast varieties of marbled, mottled or sprinkled patterns (which furnish the terms "marbled calf," "mottled calf," and "sprinkled calf"), is to be condemned because the acids used in these processes are greatly detrimental to the life of the leather.

The term "divinity calf" is applied to the dark brown calf decorated in blind, because this style of binding was formerly used to a large extent for theological books. The style of binding legal works in uncoloured calf provides another term, "law calf."

57. Cowhide, made from the skin of the cow, is used for bookbinding much less frequently in this country than in America, where it is often called "American Russia," or "Imitation Russia." Being a thick coarse leather it is generally split; if only the thin grain portion is cut off it is known as "Buffing," but if the split is heavier it is called cowhide. Cowhide is said to crumble to pieces in a few years, but if handled frequently it is fairly durable and serviceable; in America it is commonly used for popular books of fiction. Ox hide has not these faults when dressed acid-free.

58. Russia leather, as its name implies, was originally produced in Russia, where it was prepared principally from the hides of young cattle; but it is now made in different parts of Europe and America from various kinds of skins, such as horse-hides, calf, goat, and sheep skins. Genuine Russia leather is tanned in willow bark. Originally the skins were coloured red by a surface dyeing with sandalwood, but they are now prepared in other colours, and in black, which latter is obtained by staining the skins with acetate of iron. The

peculiar aromatic odour of Russia leather is due to its impregnation with an empyreumatic oil extracted from the birch tree; this scent is said to repel the attacks of insects.

Russia leather, in common with other leathers, appears to be more durable when kept in constant use, and the writer has seen some books bound in Russia leather which were in good condition after twelve years' hard wear. The leathers now generally sold as Russia are not durable. Regarding the lasting qualities of Russia leather the Royal Society of Arts' Report states: "In nearly all samples of Russia leather a very violent form of red decay was noticed. In many cases the leather was found to be absolutely rotten in all parts exposed to light and air, so that on the very slightest rubbing with a blunt instrument the leather fell into fine dust" . . . "Some Russia leather of the time of the early nineteenth century on large books, i.e. when not pared down too much, has lasted perfectly, but it appears to be a different material from that used now, with a well-defined grain." Anglo-Russ hide, when dressed free of acid, is suitable for hard wear, as it has a stronger grain than calf.

59. Book Cloth is a fairly durable material, and being a vegetable product like Buckram, it is not susceptible to those deleterious agencies that affect some leathers. Book cloth provides the cheapest bindings and is the material most largely used for the covering of books; it is obtainable in an almost endless variety of qualities, colours, and patterns.

Cloth, of course, will not withstand hard wear as good leather will do, but it is a very suitable covering material for books intended for preservation and occasional use, as its strength does not deteriorate with age. For public library books it is essential that only cloths of good quality be used, whether it be for the entire covering of books, or for the sides only. The Winterbottom Book Cloth Company's "Imperial Morocco cloths" have deservedly won a good reputation in England and America for their suitability and durability. These cloths are made of cotton, dyed in a variety of shades, and finished in numerous patterns—many of the patterns resembling the various grains of leather, the pattern most generally used for public library books resembling straight-grained morocco. These Imperial Morocco cloths are made in two qualities, known as "ordinary finish" and

"fast colour and finish." The Imperial Morocco cloths are 36 to 38 in. wide, and are made up in rolls from 36 to 40 yards long. Most of the serviceable colours can be obtained in the "ordinary finish," plain or embossed, for 11d. or 11½d. per yard, by the roll, or in the "fast colour and finish" for 2d. extra per yard. For public library work the "fast finish" quality is much to be preferred, as it does not show finger-marks in handling, and rain-drops do not spot it; soiled places can be removed by the application of a damp cloth, and when dry the surface will return to its normal condition. Sample D is the Imperial Morocco cloth, fast finish, pattern NX, colour 413, price 1s. 2½d. per yard.

In the United States important investigations were made regarding the durability of various binding materials, consequent upon the numerous complaints that were made against the binding of Congressional documents and reports in full sheep; and as a result valuable specifications for book cloths were issued by the Bureau of Standards in 1909. A valuable summary of these investigations is embodied in a pamphlet entitled *Memoranda relative to binding of publications for distribution to State and Territorial Libraries, etc.*, 1908. Space will only permit of a few particulars being given from this publication. In February, 1907, the Printing Investigation Commission addressed a circular letter to more than one hundred librarians, including those in charge of all the principal libraries of the States, asking them to indicate their preference for certain binding materials for such publications. These librarians were asked to disregard entirely the element of cost when formulating their replies, and to consider only durability, utility, and popular favour. One hundred and twenty-four replies were received, and the expression of preference was as follows:

Full sheep .	11	Buckram. . . .	70
Half Russia	18	Linen Duck . .	20
Cloth . . .	25	Canvas	19

Several librarians who favoured the continued use of sheep qualified their choice by stating that they were prompted solely by their desire for uniformity. The Bureau of Standards subsequently applied several chemical and physical tests to twenty-two specially selected samples of book-cloths and

buckrams. The objects of the chemical tests were (1) to determine the extent to which the samples of book cloths submitted were subject to the attack of insects, and to ascertain, if possible, the conditions favouring or discouraging such attacks, and a means of preventing them; (2) to determine the relative liability to change of colour when exposed to light. The objects of the physical tests were to determine the following physical properties, viz., weight, thickness, number of threads per 2 cm., absorption of moisture, expansion and contraction with changes in moisture, friction when pressed together, durability with respect to folding, durability with respect to rubbing, tensile strength, and stretch. The results of these severe tests were tabulated according to the values of the samples submitted and the best three cloths, all resembling skeepskin in colour, proved to be of nearly equal value. A conference was held at which the reports of the Bureau of Standards were considered; the best three samples were examined, and eventually one was chosen. The selected cloth was made by Messrs J. Bancroft and Sons, of Wilmington, Delaware, U.S.A., from whom the writer gathered that an adverse criticism regarding it had been made, viz., that the colouring was entirely on the surface of the material. The manufacturers have met this criticism, and the cloth now made is dyed so that the material is coloured all the way through. The cloth which is a heavy cotton fabric with a linen finish, is called Legal Buckram (Sample F), and is now made in four other shades, viz., tan, brown, green and blue; its price is 1s. 3d. per yard, 38 in. wide, in rolls of about 43 yards. This cloth conforms to the series of specifications for book cloth formulated by the Bureau of Standards in 1909; these specifications are printed as an appendix to the writer's *Commercial Bookbinding*. The firm of Holliston Mills also manufacture a cloth in accordance with these specifications. This cloth is a heavy cotton fabric, well coloured all through, and is called Library Buckram (sample E); it is 38 in. wide and is sold in rolls of 40 yards; it is obtainable in nine shades. Various other grades of book cloth are produced by this firm, of which samples M, S, and V are representative specimens; the prices may be had on application to the firm. The specifications of the Bureau of Standards provide for the essential qualities of a strong, durable

book cloth, and therefore cloths made in accordance with them can be commended as very suitable for books requiring such cloths.

Samples of several cheaper cloths that are extensively used and are suitable for some classes of bookbinding are given. The various manufacturers have different names to designate their fabrics. Sample H is a specimen of J. Bancroft and Sons' cloth known as "Linen Finish," which is 38 in. wide, in rolls of about 43 yards; and sample J is a specimen of the same firm's "Oxford Book Cloth," which is also 38 in. wide, in rolls of about 43 yards; the prices may be had upon application to the British agent.

Sample K is a product of the Winterbottom Book Cloth Company, known as "Art Linen," which is lined with tissue; it is 1s. 0½d. per yard, 36 in. wide, in rolls of about 40 yards.

The Manchester Book Cloth Company, who have a wide range of book cloths, have a serviceable fabric known as patent lined "Art Canvas," of which sample L is a specimen of colour 6; it is 8d. per yard, 36 to 38 in. wide, in rolls of 36 to 38 yards.

"Art Vellum" is another fancy name for a fabric which finds acceptance with bookbinders and librarians for certain classes of work that do not require a very strong cloth: sample M, made by the Holliston Mills, is 38 in. wide, in rolls of 40 yards; sample N, made by the Manchester Book Cloth Company, is their CB quality, SV Brown, which costs 8d. per yard, 36 to 38 in. wide, in rolls 36 to 38 yards, and sample O is the same firm's PVN quality, colour 6, which costs 6d. per yard, 36 to 38 inches wide, in rolls of 36 to 38 yards; sample P, made by the Winterbottom Book Cloth Company, is their Y quality, which costs 5¾d. per yard, 36 to 38 in. wide, in rolls of 36 to 38 yards.

In addition to their Imperial Morocco cloths the Winterbottom Book Cloth Company make two other fast finish cloths which are much cheaper in price. The "Winvis Brand" is made in two qualities, the rolls being 36 to 38 in. wide, and 36 to 38 yards long; the MF quality is 5¼d., plain, or 5¾d. embossed, and the WF quality is 6d. plain or 6½d. embossed; sample Q is of the latter quality, pattern CM, colour 951, price 6½d. per yard. The other cloth referred to is their bookbinders' cloth, of which sample R is a specimen; this sample is

known as skiver design, colour 19 fast finish, and costs 8¼d. per yard, 36 to 38 in. wide, in rolls of 36 to 38 yards.

60. The name BUCKRAM has been rendered familiar to many ears through Falstaff's antagonists, the "rogues in the buckram suits." It is a coarse open-woven fabric of cotton or linen, stiffened with size, and is made in different colours and qualities. English linen buckram is regarded as being especially strong. Being a vegetable product, buckram is not subject to those agencies that have a detrimental effect on some leathers. It will be found to be a suitable and durable material for books that are not frequently handled, but remain on the shelves for occasional reference use. It should not be used for works in great demand, as the warp and weft of this, and other textile materials do not resist constant friction, and consequently the joints become weak. Buckram does not present a good surface for direct lettering by hand; therefore the lettering on it should be restricted as much as possible. The buckrams of the Winterbottom Book Cloth Company are of linen, and they are made in three qualities, each in rolls 36 to 38 in. wide, and usually 36 to 40 yards long. The prices are for "C" quality 1s. 1½d. per yard, for "Low" quality, 1s. 3½d. per yard, and for "Best" quality, 1s. 6¾d. per yard; sample T is a specimen of the best quality, colour 54½, which is 36 in. wide and is made up in rolls of about 40 to 45 yards. The linen buckram sold by the Manchester Book Cloth Company, known as "A" quality (sample U) is 1s. 3d. per yard, 36 in. wide, in rolls of about 40 yards. The Holliston Mills' linen buckram quality E 18, sample V, is 38 in. wide, in rolls of 40 yards. The linen buckram of J. Bancroft and Sons (sample G) is 38 in. wide, in rolls of about 35 yards.

61. DUCK is the term applied in America to a very strong weave of cotton cloth having a coarse texture, which can be obtained in a large variety of colours and qualities. It is sometimes called canvas. It is a cheap durable material, and is used for large heavy books that are not frequently used. The duck manufactured by The Holliston Mills, sample S, is 38 in. wide, in rolls of 40 yards.

62. In addition to the ordinary book cloths there are several textile fabrics, known as Rexine, Keratol, Pluviusin, and Pegamoid, etc., produced as substitutes for leather; they are treated on the surface with special preparations and finished

in different colours with various patterns, mostly in imitation of the grains of the different leathers. These materials have several advantages to commend their use: they are impervious to water, and, therefore, when dirty or stained they can be cleaned with water or a disinfectant—an obvious advantage for books in a juvenile department; they do not show finger-marks or scratches; and their surface does not crack or peel.

A few drawbacks are urged against such materials: they cannot be lettered with gold by hand as easily as ordinary cloth or leather; they give off a somewhat objectionable odour at first; and labels cannot be firmly attached to them without preparing the surface by scratching or by using some substance to remove the outer surface.

REXINE is manufactured by the British Leather Cloth Manufacturing Company, Ltd., in rolls of 36 yards, the widths varying from 36 to 48 in. according to the quality, and the prices range from 8¾d. to 4s. 9d. per yard. The qualities best adapted for general library binding are L12, 36 in. wide, 1s. 4d. per yard, and L11, 36 in. wide, 1s. 2d. per yard. Sample W is a specimen of L12 quality, shade 48, grain 64. The best quality is L17 which is 48 in. wide, and costs 4s. 3d. per yard; sample X is a specimen of this quality in shade 46, grain 63; it is adapted for heavy folios, ledgers, and so forth. The quality known as L9B, 36 in. wide, 10½d. per yard, is used by some libraries for works of fiction, and is regarded as satisfactory. With regard to the lettering of this material, glaire or the ordinary blocking powders may be used, or the "Rexine" blocking medium. Any of the three following methods may also be employed, the first probably being the best:

1. Sprinkle the surface to be lettered with finely powdered shellac, and letter in the ordinary way. Afterwards remove the loose shellac lightly with a brush or cloth.
2. Wash with ordinary glaire, and after it is dry wash again with gelatine water (gelatine dissolved in hot water) made as thin as possible.
3. Wash with shellac varnish (ordinary shellac dissolved in a small quantity of methylated spirit), and when dry proceed in the usual way.

PLUVIUSIN is manufactured by the British Pluviusin Company, Ltd., in rolls of 36 yards, the widths varying from 36 to 50 in., according to the quality, and the prices vary from

6½d. to 4s. per yard. For ordinary octavo books the following qualities of Pluviusin are suitable: 10G, 45 in. wide, 1s. 6d. to 1s. 10d. per yard, according to shade; B1, 36 in. wide, 1s. 8d. to 2s. per yard, and FB2, 36 in. wide, 1s. 1d. to 1s. 2d. per yard. Sample Y is a specimen of quality B1, design PD, colour 29, price 1s. 9d. per yard. For heavy folios a stronger grade, known as the HG quality is made, 50 to 52 in. wide, at 4s. per yard. The makers do not consider that there is any necessity for the use of a special preparation in the lettering of this material, the usual washes and blocking powders being considered satisfactory; however, a wash of a 50 per cent. solution of methylated spirit may be used.

KERATOL is an American product sold in this country by Mr W. H. Beers; it is 34 in. wide, and is supplied in two grades, known as Buffingette and "C" grade respectively, which are obtainable in various patterns and shades.

DURABLINE is a strong waterproof cloth exclusively used by Messrs Cedric Chivers, Ltd.; it has a distinctive, handsome grain (resembling a watered silk pattern), the design of which is registered. It is made in two qualities, and is chiefly used by this firm for magazine cases, and for the sides of books destined for the tropics, as it is insect proof.

63. The term "Boards" reminds one of the wooden boards that were first used for the binding and preservation of the old tomes of the Middle Ages. These ponderous boards were superseded by sheets of paper pasted and pressed together, and called pasteboards. In turn pasteboards were displaced by millboards, which are themselves now limited to the better-class work; the cheaper bound books having only strawboards. Millboards for bookbinding are now made in so many qualities and thicknesses that it is impossible to describe them all; the standard sizes vary from 17 by 14 in. to 38 by 56 in., and the thicknesses vary from a board not much thicker than stout brown paper to a board an inch thick. The thickness of the boards to be used will, of course, depend upon the size, thickness and weight of the book for which they are required. The best millboards, known to the trade as "best Buckinghamshire millboards" are handmade from pure hemp rope, which makes them the strongest and most suitable boards for the best leather work. They are of a much darker colour than the inferior grades, due, to a great extent, to the presence of a

certain amount of tar in the hemp rope. It is this quality that is mentioned in Specification 1 of the Royal Society of Arts' Report. Two other qualities of hand-made boards are also made from hemp—hemp yarns, hemp coal sacks, mats and plaits, and other shipping rope. The machine-made boards, best and second qualities, are principally made from waste brown paper, but bagging, inferior kinds of coal sacks, millboard cuttings, cartridge cuttings, etc., are also included in their composition; their price is about half that of the hand-made boards. The best hand-made millboards are rolled fairly hard in order to get a finely polished finish, but not hard enough to make them brittle; this is effected by passing the boards separately between heated polished rollers several times until they are perfectly smooth. It is important that they should be quite dry when used. For common work strawboards are used; these, as their name implies, are made from straw, apparently the cheapest material obtainable. Strawboards are a cheap product of the foreigner, the largest consignments coming from Germany. The best straw-boards are made from fine straw; their price is a little cheaper than the second quality machine-made boards. Strawboards are very much more frangible than millboards, a hard knock on the corners being sufficient to spoil them completely, and, therefore, they are not to be recommended for library work.

Leather boards, made from leather parings, etc., are obtainable for bookbinding purposes, but they are not to be recommended because of their tendency (especially in the better grades) to warp.

64. The THREAD for sewing books may be of cotton, linen, or silk. Cotton thread is generally confined to machine-sewing for edition work, chiefly because of its cheapness; the tensile strength of cotton thread is considerably less than that of linen thread, but its fraying strain is very much less than that of linen thread. When cotton thread is used for any work, it should always be of the first quality. Linen thread is usually employed for hand-sewing, that made by the firm of Hayes having the best reputation. The Royal Society of Arts' Report recommends the use of unbleached linen thread, presumably because bleached thread has a tendency to rot in a comparatively short time. Good silk thread is strong and suitable for bookbinding purposes, but it is expensive; its use, therefore, is

generally confined to certain classes of "Bible work" and to good editions of works printed on thin paper and made up of a large number of sections.

The thickness of the thread to be used in the sewing of a book depends upon the thickness of the sections and the number of sections in the book. If a book consist of only a few thick sections a comparatively thick thread would be necessary in order to swell the back sufficiently so that a good groove can be made; and, conversely, as a rule if a book consist of a large number of thin sections a thin thread must be employed to keep down the swelling to a minimum.

65. GLUE. For bookbinding, especially public library bookbinding, it is essential that only glue of good quality should be used. Regarding glue, the article on that subject in Chambers' *Encyclopædia* gives the following information:

"Glue is merely an impure Gelatine. Almost every animal substance will yield it, hence all kinds of animal refuse find their way to the gluemakers' boilers." . . . "While England does not excel in this manufacture, it is a recognised fact that Scottish glue—such as that made by Messrs Cox at Edinburgh—ranks in the front of the glues of all countries. A light-coloured glue is not necessarily good, nor dark-coloured glue necessarily bad. A bright clear claret colour is the natural colour of hide-glue, which is the best and most economical. Light-coloured glues (as distinguished from gelatine) are made either from bones or sheepskins. The glue yielded by these materials cannot compare with the strength of that yielded by hides. A great quantity is now made in France and Germany from bones." . . . "Although beautiful to look at, it is found when used to be far inferior to Scottish hide-glue."

Flexible glue is now largely used by public library binders as it is soft and pliable and does not break or crack on the back, as does ordinary glue; consequently, if flexible glue be used the books are made more flexible and they last longer than they would otherwise do. Flexible glue is generally prepared by mixing good quality glue with either glycerine, or glucose, or sugar, or a mixture of two or more of them, according to the degree of flexibility required. Some flexible glue, however, is prepared from vegetable matter.

The life of public library books is largely dependent upon

the kind and quality of the materials used for their binding; careful consideration of the characteristics and relative advantages of the different materials will repay those who would bind their books economically and well.

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CHAPTER V

HISTORY AND PRINCIPLES OF PAPER-MAKING

By Henry T. Coutts

67. The origin of paper lies in the remote past when man utilised the leaves and bark of trees, skins of animals, metal, stone, wood, and waxen tablets, etc., to record his ideas. Of the various materials which have been employed for writing purposes, the most important are papyrus, vellum or parchment, and paper, each in turn having superseded all others.

Papyrus, from whence the term "paper" is derived, formed the principal writing material of the ancient Egyptian world. By the Egyptians it was named "P-apa," whence the Latin "papyrus," although it was also called "byblos" and "deltos." Papyrus was manufactured from the "Cyperus Papyrus," a sedge-like plant growing in the swamps along the borders of the Nile. It was made by laying slices of the cellular pith of the plant side by side, and placing at right angles other layers; the whole being moistened with water, pressed, dried in the sun, and afterwards smoothed and polished with a piece of ivory or smooth shell. The exact date when papyrus was first used as a writing material is unknown; it was in extensive use about 350 B.C and probably much earlier. The manufacture of papyrus was brought to great perfection by the Romans, and it was in general use as a writing material in Europe until the tenth century, or thereabouts, when it gradually gave place to paper made from cotton, linen, and other fibrous matter. It is probable, however, that some form of paper was known to the Chinese before the utilisation of the Egyptian papyrus.

From very early times the skins of animals have been used as writing material, and parchment, or vellum as it is commonly termed, may be considered to be an improvement upon a primitive idea. Parchment is supposed to have been first brought into general use as a writing material by Eumenes II

of Pergamum, about 200 years B.C.; the exportation of papyrus having been prohibited at that time by the King of Egypt.

68. Paper may be defined as a combination of flexible fibres, reduced to a state of minute division, and subsequently united in a mass to form a thin leaf-like fabric. The longer the fibres and the more intricate the mixture of them when wet, the stronger will be the sheet of paper when dry.

It is not known with any certainty when the art of making paper from fibrous matter, reduced by water to a pulp, was first discovered. The secret, however, appears to have been in the possession of the Chinese prior to the beginning of the Christian era. Tsailun, a Chinese statesman, has been credited with this important invention; he is said to have used as the principal raw materials, the bamboo cane and the bast of the paper mulberry tree. The Chinese may therefore be regarded as the inventors of the art of paper-making as we understand it at the present day.

From China, the secret of paper-making spread to Korea and Japan, and, through the agency of the Arabs, who are said to have acquired the knowledge at the capture of Samarkand (704 A.D.), spread westward. The Arabs utilised cotton as the staple material.

In Europe, the first paper mills were set up in Spain, the headquarters of the industry being Xativa, Valencia, and Toledo; and it is generally supposed that the Moors introduced paper-making into that country in the eleventh century. Paper-making was also established by the Arabs in Sicily, from whence it passed into Italy. From Spain, the art spread to France, being, it is said, introduced into that country as early as 1189. Germany and the Netherlands afterwards acquired the art, and paper was in fairly general use throughout Europe in the second half of the fourteenth century; and in the course of the fifteenth century it gradually superseded vellum.

The earliest example of a book printed on English-made paper is Bartholomaeu's *De Proprietatibus Rerum*, printed by Caxton, 1495-6. The paper was made by John Tate, as is evidenced by the following lines, which occur at the end of the book:

"And John Tate, the younger, joye mote he broke
Which late hathe in England, doo make this paper thynne,
That now in our Englysch, this book is prynted Inne."

Tate's mill was near Stevenage, in Hertfordshire, and its existence is noted in the household book of Henry VII: the first entry, "For a rewarde geven at the paper-mylne, 16sh. 8d.," dated May 25, 1498; the second, "Geven in rewarde to Tate of the mylne, 6sh. 8d.," bearing the date 1499.

A paper mill was established at Dartford, in 1588, by John Spielmann, a German, who was granted a license by Queen Elizabeth "for the sole gathering, for ten years, of all rags, etc., necessary for the making of such paper." Spielmann, however, made only coarse papers, and until late in the eighteenth century all the finer qualities of paper were imported, principally from France and Holland.

Paper-making was studied in Holland by James Whatman, who in 1760 (or 1770) founded the celebrated "Whatman" mill at Maidstone.

The introduction of the "Hollander" beating engine, about the middle of the eighteenth century, first in the Netherlands, then in Germany, and afterwards in this country, made it possible to secure an increased uniformity of the pulp, while saving much time and energy. The beating engine, in conjunction with the paper-making machine invented in 1798 by Louis Robert, the manager of a paper-mill at Essones in France, caused a revolution of the paper industry, and resulted in its rapid development.

In the year 1807, at the request of Messrs Fourdrinier of London, Bryan Donkin, an English engineer, built a machine on the lines of that of Robert, on which a continuous web of paper could be made. Messrs Fourdrinier spent, and unfortunately lost, an enormous sum of money in perfecting this machine, which ultimately was universally adopted.

The repeal of the paper duty, in the year 1860, gave a further impetus to the trade, and resulted in important developments, the chief of which were the general adoption of rag substitutes, various improvements in the mechanical

construction of the paper-machine, and the introduction of other mechanical contrivances.

69. *Raw Materials.* Many are the vegetable substances from which paper can be made, but it is desirable that the substances used should be such as are capable of producing a good paper, are moderate in cost, and can be continuously supplied. These requirements limit the choice of material to a comparatively narrow field.

The more common of the raw materials that are, or have been, used in the production of paper, are: Rags (cotton and linen), paper mulberry, China grass, esparto, straw, mechanical wood pulp, chemical wood pulp, hemp, jute, and flax waste. Manila hemp, jute, and flax waste are principally used in the manufacture of wrapping papers, where colour and texture are subordinate to strength.

Prior to the middle of the nineteenth century, printing papers were chiefly made of the celluloses obtained from cotton, flax, and hemp, which are generally considered to be the best sources of fibre for the papermakers' use. The principal materials were rags, obtained in the form of old garments, ropes, string, etc., or surplus cuttings supplied by the clothing factories. The difficulty of obtaining rags in sufficient quantities, to meet the ever-increasing demand for paper, resulted in the introduction and general adoption of rag substitutes, the chief of which are wood pulp and esparto. Paper made from these substitutes, when manufactured under the best conditions, looks well and is fairly good, but for strength and durability it does not compare favourably with the old rag papers.

At some time previous to the year 1801, Matthias Koops experimented as to the use of straw, wood, and old paper as substitutes for rag, and his book is printed partly on paper made from these raw materials. So far as is known, Koops was the first person to employ these rag substitutes in a practical way.

In the year 1846, Keller brought out a process for the manufacture of mechanical wood pulp, and a method for the production of chemical wood pulp was patented by Tilghmann in 1866. It was not, however, until between the years 1870 and 1880 that wood pulp was manufactured and used to any appreciable extent. Mechanical wood pulp must not be con-

fused with chemical wood pulp. The former is produced by mechanical means alone; no chemical agents being used. The wood is cut into convenient lengths, stripped of its bark, and finely ground by means of a massive cylindrical stone called the "grindstone," against which the wood blocks are steadily pressed. In modern mills hydraulic presses are used for this purpose. Overheating is prevented by a stream of water directed between the blocks; the water also serving to carry away the ground wood. A series of frames with mesh of varying sizes separates the pulp into various grades. The pulp produced in this way is commonly called "ground wood," taking its name from the process of grinding. Wood pulp prepared in this way produces a paper of very poor quality; it possesses hardly any felting properties, the cellulose matter not being separated, and admixture with other fibres, such as wood cellulose, is rendered necessary. Chemical wood pulp is procured by the digestion of the wood with a chemical solution. The chemical agents usually employed are bisulphite of lime and caustic soda, the processes being known respectively as the "sulphite" and "soda" processes. The "sulphate" process, in which the primary boiling agents are sodium sulphate and caustic soda, is sometimes employed.

The use of esparto grass for paper-making may be said to date from the year 1856, when Mr T. Routledge commenced with a few tons at the Eynsham Mills, although several attempts to employ it prior to this date are recorded, one patent being dated as early as 1839. Specimens of paper manufactured from esparto were shown at the Exhibition of 1851.

In a paper read before the Library Association in November, 1907, Mr R. W. Sindall gave the following brief descriptions of the vegetable fibres commonly used in the manufacture of paper.

"A cotton fibre is about 25 millimetres long (1 in.) and 0.03 millimetre diameter. It is tubular in shape, twisted and turned about its axis, like a corkscrew.

"A linen fibre is also 25 millimetres long (1 in.) and 0.016 millimetre in diameter. The central canal is very small, and the fibre is thickened at intervals. The fibre generally resembles a twig with frayed-out ends.

"An esparto fibre is only 1.5 millimetre long and .015

millimetre diameter. The pulp produced from the raw material also contains a large proportion of small cells and vessels which are not fibres in the accepted sense of the word.

"A chemical wood pulp contains broad, flat ribbon-shaped fibres of varying lengths.

"A mechanical wood pulp consists of a mass of fibres, some long, coarse and harsh, others small, shapeless, and all rather inflexible."

70. *Methods of Manufacture.* The strength of a paper is largely determined by the constitution and structure of the fibrous elements of which it is composed, but the processes through which the material passes in the course of manufacture have a very important bearing upon the form and quality of the finished paper. For instance, there is an obvious difference between a strong ledger paper and a blotting paper, and yet both may consist entirely of cotton rags; the distinction is made by variations in methods of manufacture.

Many and various are the processes through which the fibrous material has to pass before it evolves into the finished sheet of paper, but exigency of space forbids more than brief mention of them. Those desiring to study the several processes in detail are referred to the authorities mentioned at Section 83.

The stages of manufacture are conveniently classified by R. W. Sindall in the introduction to his useful work on *Paper Technology*, as follows:

1. The isolation of the paper-making fibre (cellulose) from the raw material.
2. The conversion of the cellulose into pulp, or "half-stuff."
3. The "beating" of the "half-stuff."
4. The manufacture of the paper from the beaten pulp.
5. The processes relating to the finishing of the paper.

71. *The Isolation of the Paper-making Fibre (cellulose) from the Raw Material.* The preliminary treatment of the several raw materials is similar, although the processes vary in nature and extent, according to the physical and chemical characteristics of the vegetable tissue, and according to the nature or quality of the paper to be made. The raw material is sorted into several grades according to material, cleanliness, and colour;

freed from dirt and other external foreign substances; and cut into small pieces by machinery or hand. It is then boiled with alkali, generally caustic soda, which renders the foreign substances or non-cellulose constituents of the material soluble; the soda combining with these soluble compounds to form a soap which is subsequently washed out.

The time of boiling, the strength of the liquor, and the temperature and pressure at which the boiling is conducted, are dependent upon the quality of the paper to be made, the nature and state of the raw materials, and the impurities to be removed. "Generally speaking, the methods adopted for the isolation of paper-making fibre aim at the production of a more or less pure cellulose by digestion of the raw material with alkali or acid salts at a fairly high temperature. The alkali process is in practice applied practically to every commercial fibre, but the acid process is at present confined to the manufacture of chemical wood pulp."

The fibres are afterwards washed, and put into the "breaking engine" to be converted into "half-stuff."

72. *Conversion of the Cellulose into Pulp, or "Half-Stuff."* "Half-stuff" is the fibrous mass produced by washing and breaking, and, as its name implies, is pulp partially prepared. "The boiled material, which usually retains its shape and general form even after the severe process of digestion, is mechanically disintegrated into single isolated fibres and in this condition the pulp obtained can be readily bleached. Straw, esparto, and wood are easily broken up, whereas rags (cotton and linen), canvas cuttings (hemp), bagging (jute) require very prolonged treatment."

The operation of bleaching is generally conducted in the "breaker," although in some instances special bleaching engines are provided. The chemical agent usually employed in the bleaching of fibres is chloride of lime, commonly termed "bleaching powder."

73. *"Beating" of the "Half-Stuff."* Beating the pulp is one of the most important processes of paper-manufacture, for upon it largely depend the properties of the finished product. It has been said that "paper is made in the beating engine," and there is no doubt that the quality of the paper produced is influenced to a very considerable extent by variation in the process of beating.

Fibres possessing different structures require different treatment. Long fibres, such as linen and cotton, require breaking and splitting into fibrillæ; while short fibres (for example, esparto and straw) simply require separating. It would, therefore, seem inadvisable to "beat" fibres of widely different structures at the same time.

The time occupied by the beating, and the degree of sharpness in the knives used, vary considerably according to the nature of the fibrous material, and according to the properties desired in the finished paper. The prolongation of beating, and the use of blunt knives, tend to preserve the fibrous nature of the pulp, while quick beating with sharp knives, has a contrary effect. Generally speaking, for the production of strong papers, such as ledger papers, prolonged beating with blunt knives is necessary; for the production of blotting papers, and papers of the featherweight variety, the pulp is quickly beaten with sharp knives for one to two hours only.

Wood pulp fibres are finally beaten in what is known as the "refining engine," and the pulp "brushed out" after its partial treatment in the "beater."

Sizing. Paper made from fibres in a pure state is of a porous and absorbent nature, and will not resist water or ink. Sizing is therefore necessary to make the paper to a certain extent water resisting, and capable of carrying ink without penetration.

In the case of ordinary machine-finished papers, the processes of sizing, loading, and colouring the pulp are dealt with at the same time and in the same appliances as the beating operation. Sizing, conducted in the beating engine, is known as "engine sizing." Rosin size, or rosin soap as it is termed, is the agent usually employed for printing papers, and is prepared by dissolving rosin in soda, by the aid of steam. The necessary amount of size is put in the beater, and sufficient time is allowed for it to mix thoroughly with the pulp. It is then decomposed by means of alum, which results in the finely divided rosin being precipitated upon the whole mass of pulp.

A separate process of sizing is applied, after the paper has been produced, in the manufacture of high-class hand-made and machine-made rag papers. This operation is termed "tub-sizing," taking its name from the method of

dipping the sheets of paper, after they have been dried, into a tub or vat containing a solution of glue or gelatine. A similar process is commonly conducted by machinery, the sheets of paper, after leaving the drying cylinders, being carried on a travelling felt through a trough containing the hot size solution.

Loading. It is the general practice to add to papers, except those of the highest quality, a quantity of cheap mineral matter, such as china clay. This operation is termed "loading" or "filling." The clay, or other mineral substance, is added to the pulp in the earlier stages of beating, so that a thorough incorporation of the mixture may be ensured.

The avowed purpose of loading is to fill up the pores of the paper, and thus obtain a sheet closer in texture, greater in opacity, and ultimately possessing a smooth surface adapted to the requirements of printing. Loading, however, is often carried to excess, and is done with the object of cheapening production; a large portion of the more expensive fibrous matter being substituted by the cheaper mineral matter. This over-loading materially weakens a paper; the strength of paper lying chiefly in its fibrous element.

Colouring. Nearly all papers receive some addition of colouring matter, which is added to the pulp when in the beater. Bleached pulps retain a residual yellow tint which must be neutralized or corrected, by the addition of blue and red, to present to the eye the impression of white.

74. *The Manufacture of Paper from the Beaten Pulp.* The pulp from the beater is discharged into what is technically known as the "stuff-chest," diluted with water, and kept gently moving. It is then strained in order that any dirt or lumpy pieces of pulp may be removed, and is ready for conversion into paper, either by hand or machinery.

Hand-Made Paper. In the case of paper made by hand, the workman dips the mould, a rectangular sieve, into the vat containing the pulp, and lifts out a sufficient quantity for a sheet of paper, holding the mould horizontally. The mould consists of a wooden framework, over which is stretched a piece of fine wire gauze supported by stouter wires, and a movable frame, called the "deckle," which fits closely to the top of the wire screen. The purpose of the deckle is to retain the stuff on the mould, and to determine the size of the sheet

of paper. As the water drains through the wire surface of the mould, a peculiar side-to-side and back-to-front motion is imparted by the "vatman," which ensures the felting or intertwining of the fibres; a dexterous operation upon which the strength of the paper largely depends.

The deckle is then removed and the mould passed by the vatman to the "coucher," who transfers the wet sheet to a felt. A pile or "post" of alternate wet sheets and felts is built up, and subjected to pressure. The sheets are then separated from the felts by the "layerman," and again pressed, after which they pass into the drying-room. They are then "tub-sized," if required.

The sheets are freed from superfluous size, dried, and a finish put upon them by repeated pressing, calendering, or plate-glazing. In the latter case the sheets are placed between polished plates of copper or zinc, and passed between steel rolls, being subjected to heavy pressure.

Paper may be either "laid" or "wove." "Laid" paper when held up to the light exhibits a number of lines close together, intersected by lines at right angles about an inch apart, the effect being due to the position of the wires forming the mould. "Wove" paper is made on a woven wire in which the lines cross and recross at even distances.

Watermarks are impressed on hand-made paper by wires sewn on to the wire cloth upon which the paper is formed, and in the case of machine-made paper by means of a cylinder covered with wire gauze, called the "dandy-roll," on which is sewn the wire-woven pattern of the water-mark. This cylinder, by revolving and pressing upon the paper just when it ceases to be pulp, produces the required impression. Watermarks are generally to be seen on most papers of the fourteenth to the eighteenth centuries, and together with the wire lines are useful as bibliographical aids. In collating some of the older and unpaged books the position and regularity of the watermarks are a guide to the completeness of a book; and a study of watermarks has revealed many bibliographical frauds. Among the more important devices which have been used as watermarks are the "pott," "foolscap," "post horn," and "crown"; the origin of the names of the commoner sizes of paper is, therefore, obvious. In modern papers the watermark is merely the

maker's trade-mark, and in many papers it is omitted altogether.

Hand-made papers possess special properties, but they are now, comparatively speaking, manufactured only to a very small extent. A sheet of hand-made paper may generally be recognized by its rough uneven edge, called the "deckle," which derives its name from the "deckle," or frame of the mould. Certain machine-made papers, however, are sometimes put through a special process in order to procure a sham deckle-edge in imitation of hand-made papers.

75. *Machine-made Paper.* The modern paper machine, with its many improvements, differs but little in principle from that originally constructed by Fourdrinier. When paper is made by machinery, the pulp, leaving the stuff-chest, passes into the feed-box, being carefully regulated so as to ensure a uniform supply of pulp of the right consistency. The feed-box is provided with an overflow pipe to carry away the superfluous pulp, back into the stuff-chest, and by this means the diluted pulp is kept at a constant level, and a regular rate of flow. The pulp then passes through "sand-traps," or shallow troughs, the length of which varies according to the quality of the paper to be made. These "traps" are constructed with ribs at the bottom, so as to keep back impurities and lumpy pieces of pulp. Any dirt or fibrous knots which escape the sand-traps are removed by the passing of the pulp through one or more strainers.

The mixture of pulp and water flows in an even stream on to an endless wire cloth—which corresponds to the mould in hand work—and is rapidly carried forward to undergo the subsequent processes. Thus, instead of single sheets, an endless sheet or web of paper is produced. The pulp is carried on to the travelling wire by means of a strip of sheet rubber or canvas, called the "apron." Two square-sectioned rubber bands, termed "deckle-straps," run on each side of the wire to prevent the pulp from spreading beyond the required width.

The peculiar shaking motion, imparted by the hand worker, is partially imitated on the machine by a rapid to and fro motion of the frame carrying the wire, but it is only possible to produce a side to side shake. Thus there is a tendency for the fibres to be drawn more in the direction in which the wire is travelling than in the other.

Felting, or intertwining of the fibres, has a great effect upon the strength of the paper, and to this is largely due the fact that paper made by hand is uniformly stronger than that made in the machine. A machine-made paper is easily torn in the direction of the fibre, while in the other direction, the fibres, being at right angles, offer a fair amount of resistance. Hand-made papers generally show a slight difference in the tearing strain, though, for the reason already given, it is not nearly so pronounced.

As the pulp proceeds along the surface of the wire it gradually loses water, but in order to obtain greater consistency recourse is made to artificial drying by means of suction boxes placed immediately below the wire.

Before the pulp has travelled over all the suction boxes it is submitted to the action of the "dandy-roll," which revolves and presses on the surface of the wet sheet. "Wove" and "laid" papers are differentiated by the pattern of the wire covering the dandy-roll.

The web of paper, still containing a large amount of water, is carried by the wire between two "couch-rolls," the pressure resulting in the removal of more water, and in the more complete felting of the fibres. The moist web of paper then travels unsupported for the first time, for a short distance to an endless felt, along which it passes to the "press-rolls."

Leaving the press-rolls the sheet is conducted by means of travelling felts over several drying-cylinders. These cylinders are made of cast-iron, highly polished, and heated internally by steam. "Drying" has to be conducted with great care so that the water may gradually evaporate. Rapid drying, or drying at a high temperature, generally results in the production of a paper of inferior quality.

What is practically the last process in paper manufacture is "calendering," or the polishing of the surface of the paper. The higher grades of paper are tub-sized, after the process of drying, and then calendered. The more ordinary papers have been sized in antecedent operations, and pass directly between calender-rolls placed at the end of the machine. Sometimes a further finish is given to the paper by means of super-calenders.

The paper is finally wound on reels, cut, sorted, and packed, and is then ready for the printer.

REFERENCE LIST OF AUTHORITIES. *See* Section 83.

CHAPTER VI

MODERN BOOK PAPER

By Henry T. Coutts

76. Of the several factors determining the physical life of a book, not the least is the quality of the paper. The length of time that a book will resist the chemical action of light, temperature and moisture, and the wear and tear of library use, depends largely upon the quality of the paper of which it is made. Large numbers of books issued at the present day are printed on paper which rapidly discolours, or falls to pieces after the books have been in circulation a short time. Few of these books pay for rebinding; the quality of the paper is such that the sheets cannot be resewn unless they are guarded or oversewn at the back folds, both of which methods will generally prove unsatisfactory or expensive.

It is evident to any one who has studied the subject that the book papers of the present day are not, as a class, so durable as they were several decades ago. In support of this assertion the statement of Mr Cedric Chivers, the well-known bookbinder, who recently instigated an examination of book papers with special regard to sewing, may be quoted. "Books printed before 1890, showing an average tensile strength of 10 pounds, lost 20 per cent. by folding and sewing. Books printed during the present [1909] and last year, showing an average strength of six pounds, lost 50 per cent."

This deterioration is greatly to be regretted. It is true that much of the so-called literature of to-day is of an ephemeral nature, and deserves to die at an early age; but, on the other hand, there are numerous books possessing a permanent value, which, with occasional repairing and rebinding might reasonably be expected to stand ordinary wear and tear, and to last for many years. A proportion of books in the latter class may never be reprinted, and to use, in the composition of such books, a paper which will disintegrate in the course of a few

years, can only be described as vandalism. The deterioration of paper becomes a very serious matter when one thinks, for example, of the journals of the learned and scientific societies, and remembers that the results of much valuable original research may be committed in print to paper of a very transitory nature. Even newspapers, the paper of which is generally of the worst possible kind, have a certain historical value, and much interesting information may be lost to future generations through the defects of the paper of our own day.

It is of interest to note that in America the same difficulty exists in obtaining durable book papers. Towards the end of 1908, Mr William Prescott Greenlaw, Librarian of the New England Historic Genealogical Society, read a paper before the Society, in which he said:

"One of the important needs of the library of the New England Historic Genealogical Society—a desideratum also common to most libraries—is that of bringing about hereafter the more general use of durable paper in books of permanent value. A large proportion of those books in this library which have been published during the last thirty years are rapidly disintegrating, while the most of those published much earlier are still in good condition, although subjected to the same use and exposure."

Generally speaking, paper-makers have, during recent years accentuated the fairly important matters of bulk, weight, opacity and surface, while seemingly overlooking the all-important matter of durability. Probably the deterioration of book papers has, to a large extent, come about unwittingly through experimentation. It is to be hoped, however, that now the unsatisfactory nature of the large proportion of modern book papers has been clearly proved by experience, publishers and paper-makers will combine to remedy this state of affairs.

77. The poor quality of the average printing paper of recent years may, in some measure, be ascribed to the enormous and increasing output of literature, and the consequent difficulty of obtaining in sufficient quantities, cotton and linen rags, the basis of the older and more durable papers. The introduction and general adoption of new and cheaper fibrous raw materials, together with the prevailing tendency towards cheapness and

the popular desire for quantity rather than quality, have largely aided the production of inferior paper.

Modern book papers are mainly composed of chemical wood pulp and esparto, with an occasional intermixture of rag. Mechanical wood pulp, mixed with sulphite wood pulp, is largely used in the manufacture of newspapers and the cheaper class of printing paper. A proportion of mechanical wood pulp is sometimes included among the constituents of the cheaper modern book papers, but its use for this purpose is to be condemned, for it possesses very little felting properties, and is bad in its chemical constitution, containing as it does the resinous and gummy matters of the original wood. Paper made of mechanical wood pulp has little strength, is brittle, and soon turns yellow. The greater the quantity of mechanical wood in a paper, the quicker will that paper decay.

The mere fact that a paper is made of wood, i.e. chemical wood pulp, does not necessarily mean that it is a bad paper. Notwithstanding, modern wood papers have a very poor reputation, and deservedly so; but this is owing more to their cheap and hurried manufacture than to their constitutional elements. Although wood is by no means the best fibrous material for paper-making, it is possible to produce a fairly good paper from chemical wood pulp if proper methods of manufacture be applied; as also it is possible to produce a very inferior rag paper by bad methods.

Thus it will be seen that in considering the betterment of book papers, not only must stress be laid upon the importance of a good grade of vegetable fibre, but the methods of manufacture must also be taken into account.

78. Nearly all modern printing papers are machine made. Attention has already been directed to the importance of the felting or intertwining of the fibres, and to the fact that, in the case of paper made in the machine, the fibres are drawn chiefly in one direction. Consequently the folding of the paper, when made up in book form, has a material bearing upon wear and tear. Printers and bookbinders would do well to bear this in mind. Mr Chivers has gathered together some interesting data on this subject. He says: "As the result of testing the paper of some five thousand books, an average difference in strength was discovered between the machine way of the paper and the cross direction of no less than

45 per cent. . . . The majority were English books, and the question of superiority of their papers came under review. With 3717 English books 66 per cent. of the papers showed the grain to be across the page, that is in the strong way for binding. Thirty-four per cent. of the papers exhibited the grain up and down the page, making the book weak in its fold for sewing. With 981 American books 14 per cent. only were in the strong way of the grain, whilst with no less than 86 per cent. the grain of the paper was in the length of the book, and therefore the sewing was through the weakened fold of the leaf. The difference in the strength of the paper in one direction or the other being as much as 45 per cent., it is especially desirable to know of this fibrous direction with weak modern papers before proceeding to bind a book which is to be much used."

79. Two classes of paper are largely used in the production of modern books, both of which are very unsatisfactory from the standpoints of the bookbinder and librarian. One is a light bulky paper known as "antique," or "featherweight"; the other, a heavy, clay-surfaced paper commonly called "art paper."

Featherweight Paper. The constituents of "featherweight" paper are generally wood pulp and esparto, the fibres of which are very loosely interwoven. The surface of the paper is left in a rough state which renders it very susceptible of absorbing dirt. It is a paper which possesses little strength or substance, and there is a tendency in some of the cheaper kinds to disintegrate in the mere handling of the sheets in printing. The weakness of the paper lies not so much in its components as in the treatment to which the pulp is subjected during manufacture. The fibres are beaten quickly and only for a short period, and the wet sheet of paper, instead of being subjected to great pressure, is but lightly compressed between the press rolls. This naturally results in a greater air-space, and a consequent saving of raw material, which may partly account for its extensive manufacture. The popularity of antique or "featherweight" paper must, however, be ascribed in a large measure to the fact that by its use a bulky book can be produced with a minimum of weight. Its lightness would appear to be its only practical advantage to the user, though it must be admitted that some of the better kinds look fairly well when they leave the printer's hands. "Featherweight"

paper is ill adapted to the requirements of a library, for it quickly becomes dirty, is easily torn at the folds, and seldom pays for rebinding.

80. *Art Paper.* "Art paper" is the outcome of the invention of the "half-tone" process. The blocks, being so finely grained, it was found necessary, in order to produce a good impression, to print on a paper having a smoother surface than that possessed by the ordinary calendered papers. A highly-glazed surface is procured by a coating of china clay or other white insoluble mineral matter, generally on a meagre basis of wood or other cheap fibres. The dressing of these "art papers" adds considerable weight, and, not being of a fibrous nature, it renders the paper very heavy and brittle. The result is that a book composed of "art paper" soon exhibits broken corners, readily breaks at the back folds, and is not easily rebound, as the paper will not hold the sewing thread. The clay has an affinity to damp, the signs of which soon appear on the paper. Moreover, the surface is apt to flake off, so that anything pasted to it is likely to come away together with the surface itself. The glaze on the surface is very trying to the eyes in reading, and probably much of the prevailing defective eyesight is due in a degree to these white highly-surfaced papers. "Art paper" certainly serves its purpose in producing clear impressions from delicate half-tone blocks, and is opaque, but it has little else to commend it. Where highly-surfaced papers are considered necessary for the production of half-tones requiring much detail, it is suggested that a thin art paper, coated only on the face, be used for this purpose, and that ordinary paper be used for the text of the book; the illustrations being folded round the adjoining sections.

In many instances where minute detail is not absolutely necessary, a suitable calendered paper will be found quite satisfactory from the printers' point of view, and at the same time has the great advantages of less weight, more durability, and a better substance for sewing.

81. The weight and bulk of a paper should be sufficient to ensure strength, resistance to wear and tear, and opacity; but additional weight and bulk beyond the required standard will result, not only in a waste of material, increased room for storage, and inconvenience in handling, but also in a decrease

of durability. Printers and publishers should, therefore, consider the thickness of the paper with respect to the size of the book. A heavy or bulky paper, in the case of an ordinary octavo book, is not only unnecessary, but is most undesirable, inasmuch as the thickness of the paper at the folds prevents the book from opening easily. Consequently readers, in endeavouring to make the book open flat, force the back, and in so doing put a great strain upon, and often tear the paper at the folds.

82. *The Ideal Paper.* The question as to the betterment of modern book papers is, of course, a technical one, and it would be presumption on our part to give a detailed specification for a standard printing paper suited to the requirements of the average library book. The desideratum, however, may be described in general terms as a light, strong, flexible paper, possessing good printing qualities and being sufficiently opaque for continuous reading, that will stand considerable folding, and generally wear well. Such a paper should possess a firm, close texture; should be carefully manufactured from a good grade of vegetable fibre; should contain only a very small percentage of mineral matter; and should neither be overbleached nor excessively calendered.

It is generally agreed that the celluloses obtained from cotton, flax, and hemp, are superior in many respects to those obtained from wood and esparto, and that in all papers in which durability is essential, rag should form a percentage of the stock, and mechanical wood should be completely excluded. This is substantiated by the "Report of the Committee of the Society of Arts on the Deterioration of Paper, 1898," of which the following is an extract:

"The committee find that the paper-making fibres may be ranged into four classes: (A) Cotton, flax, and hemp; (B) Wood celluloses (*a*) sulphite process, and (*b*) soda and sulphate process; (C) Esparto and straw celluloses; (D) Mechanical wood pulp. In regard, therefore, to papers for books and documents of permanent value, the selection must be taken in this order, and always with due regard to the fulfilment of the conditions of normal treatment above dealt with as common to all papers.

"The committee have been desirous of bringing their investigations to a practical conclusion in specific terms, viz., by the suggestion of standards of quality. It is evident that in

the majority of cases, there is little fault to find with the practical adjustments which rule the trade. They are, therefore, satisfied to limit their specific findings to the following, viz., *Normal standard of quality for book papers required for publications of permanent value.* For such papers they would specify as follows:

"*Fibres.* Not less than 70 per cent. of fibres of Class A.

"*Sizing.* Not more than 2 per cent. rosin, and finished with the normal acidity of pure alum.

"*Loading.* Not more than 10 per cent. total mineral matter (ash).

"With regard to written documents, it must be evident that the proper materials are those of Class A, and that the paper should be pure, and sized with gelatine, and not with rosin. All imitations of high-class writing papers, which are, in fact, merely disguised printing papers, should be carefully avoided."

There is no doubt that the betterment of modern printing paper must be effected on similar lines to those laid down by the Committee of the Royal Society of Arts. A system of paper tests and the establishment of authentic standards would confer a benefit on the makers, as well as the users of paper. Attention is directed to this matter, by Julius Hübner, in the "Cantor Lectures on Paper Manufacture," delivered before the Royal Society of Arts, February, 1903, from which the following quotation is culled. "The importance of testing papers systematically has been recognized in various countries, but especially in Germany. The pioneer in this branch of testing was the splendidly equipped testing Institute at Charlottenburg; this establishment includes a department devoted entirely to paper testing, with the development of which the name of its Director, Prof. Herzberg, is intimately connected. The great value of paper testing does not consist alone in ascertaining the quality and the properties of a given sample; the result of systematic tests cannot fail to be invaluable to the paper-maker, because, by their consideration, irregularities will be exposed and remedies will suggest themselves.

"The real object of the testing institute was not at first recognized by the German paper-makers. The idea prevailed that such conditions would be exacted as would only subject the manufacturer to further heavy burdens. Experience has

proved, however, that the testing institute is a true and valuable friend to the paper-maker. . . .

"To bring paper testing to the position which it should occupy in order to be of real value to the industry, it must be conducted on lines similar to those adopted by the Prussian authorities.

"Proper paper standards should be established; these have proved a boon, not only to the buyer, but also to the paper-maker. The results of all the tests, as well as of investigations into the composition of foreign papers which compete against the home industry in our markets, ought to be published periodically and thus placed at the disposal of our manufacturers."

In the United States of America excellent work has been done in the direction of standard paper specifications, by F. P. Veitch, the chief of the Leather and Paper Laboratory, Bureau of Chemistry, Washington.

While it is desirable that everything possible should be done to improve the quality of paper by bettering the condition of the paper-making industry, it must not be forgotten that there are external influences to be taken into account. The quality of the supply is largely governed by the demand. Paper-makers must make to the order of their customers, the printers and publishers, and it is to the latter that librarians and book-binders must appeal for a better modern book paper.

This is an age of cheapness, and in book papers, as in other things, if the purchaser wants a good article, he must be prepared to pay a fair price for it. From the broad economic point of view, librarians and book-buyers generally would do well, if necessary, to pay a trifle more per volume to ensure a better paper for books of permanent usefulness. The addition of a halfpenny or penny per volume, in the case of a book of average size, should make an enormous difference in the quality of the paper.

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CHAPTER VII

FORM OF TENDER AND SPECIFICATION

By Henry T. Coutts and Geo. A. Stephen

84. For various reasons it is impracticable to draft a detailed form of tender, with general conditions suitable for all public libraries. The general conditions will, to some extent, vary in different localities, and will largely be those adopted by the Council administering a particular library; for this reason, clauses dealing with such items as the rate of wages to be paid, have been omitted.

Because of the various qualities of paper that unfortunately are now used for books, it is not wise to adhere rigidly to one method of binding. It is advisable, however, to prepare a specification and schedule of requirements which shall provide for the essential features of public library binding, including good workmanship and good materials, so that inexperienced binders will be either dissuaded from tendering or will not be allowed to execute work in their own manner. On the other hand, the specification should allow the binder a certain amount of latitude, so that advantage may be taken of the methods which experience guides him to adopt in the interests of good binding. The following specification includes the essential items for library bookbinding, and can be adapted to meet the special requirements of a particular library.

85. A suggested form of tender is given on the following page.

86. General Conditions.

1. This Proposal is to be endorsed "Tender for Bookbinding," and must be delivered, duly filled up, signed, sealed, and under cover, at ..... not later than ..... after which date no proposal will be received.

2. The Council do not bind themselves to accept the lowest or any tender, but when a tender is accepted they will enforce all the terms of the contract.

BLANKTOWN PUBLIC LIBRARIES

TENDER FOR BOOKBINDING

To the Council of Blanktown.

I or We _____

do hereby propose to execute and supply to you from _____

to _____

all the Work which may be ordered, according to the stipulations and conditions of the Specification and Schedule annexed hereto, and at the prices quoted in the said Schedule.

And I or We _____

do hereby agree and undertake to fulfil and abide by the terms and general conditions hereinafter set forth; to enter into and execute a proper CONTRACT for giving effect to this Tender; and (with the persons hereinafter named) to execute a bond, in the sum of _____ jointly and severally, for the due performance and execution of the said Contract.

As Witness hand this day of _____ *One Thousand Nine Hundred and Ten.*

Signature _____

Address _____

Names of the two Persons proposed as Sureties		Occupation or Profession	Residence
Christian Name	Surname		

3. The Contractor, if required, must duly execute a Contract within fourteen days from the acceptance of the tender.

4. All Tenders will be liable to be rejected in which any alteration is made in any of these conditions, or in the Specification or annexed Schedule.

5. The Contractor shall not assign or underlet this Contract or any portion thereof, without the written authority of the Council being first obtained.

6. The Council reserve to themselves the right to employ, if they shall think fit to do so, any bookbinder other than the Contractor.

7. There shall be no extras beyond those provided for in the Specification, unless sanctioned by the Librarian, in writing, before the work is proceeded with.

8. The Contractor must provide suitable packing-cases for the books. He must pay all expenses incurred in the transit of the books to and from the respective Libraries of the Borough, and he must hold himself responsible for all books entrusted to him, according to the lists (or binding sheets) sent with the order.

9. The Contractor will be required to replace at his own cost all volumes which may be lost or damaged, and to repair satisfactorily all bindings which may be damaged in any way, between the time of receipt from and delivery to the Libraries.

10. If any of the books shall, in the opinion of the Librarian, be not satisfactorily bound in conformity with the Specification, they shall, at his discretion, be replaced and rebound at the Contractor's expense; and if any of the books shall, within one year from the date of binding, be found faulty in sewing or defective in workmanship, they shall be repaired or rebound at the Contractor's expense, as the Librarian may deem necessary.

11. The Council, if they deem it expedient, in consequence of the requirements of the Contract not having been properly fulfilled by the Contractor, may, at their discretion, cancel or make void the Contract.

12. Accounts for goods supplied under this contract are to be rendered when the whole order has been executed; the quantity, description, and price for binding the books to be stated. Payment will be made after such accounts have been passed by the Public Libraries Committee, and after the

Council have authorized the issue of cheques in respect thereof.

13. Binding Sheets (or Slips) giving the necessary instructions will be sent with each batch of books, and they must be returned with the books, with the items filled in.

14. The Contractor shall complete and return each batch of books within four* weeks from the date of despatch from the respective Libraries; in default thereof the Council shall have power to deduct a sum equal to 10 per cent. of the charge due to the Contractor upon the uncompleted portion of the order.

15. The Contractor shall submit with the tender three crown 8vo. volumes, as specimens, bound according to this Specification in (*a*) half morocco, (*b*) cloth, (*c*) boards only (uncovered, shewing the sewing and method of inserting slips in boards, etc.); samples of the leathers, cloths, boards and other materials the Contractor will use are also to be submitted.

16. The Contractor whose tender is accepted shall provide the Librarian with a mounted card of various coloured leathers and cloths (the colours of the leathers and cloths to match), and the materials in which the books are bound shall be approximately of one of such colours as may be ordered.

87. SPECIFICATION.

Collation. All books received by the Contractor to be examined and collated prior to repairing or binding, and any imperfections, deficiencies, or pages seriously soiled or damaged to be reported to the Librarian, whose instructions must be awaited. The Council will not pay for any imperfect book bound or repaired without the Librarian's written permission. Covers and advertisements not to be bound in unless ordered.

Rolling. Books to be rolled when necessary, care being taken to prevent "set off" of ink.

Sewing. All books printed on paper of good quality must be sewn "all along" (one sheet on) with unbleached linen thread of suitable thickness, over unbleached linen tapes. Hand sewing is preferred, but machine sewing will be permitted under satisfactory conditions. The first two and last two sections of each book to be strengthened with strips of

* This period is regarded as a fair one for the execution of an ordinary batch under general conditions. If very big batches of books (say 600 or 700) are sent it would be reasonable to grant an extension of time.

linen down the back. Books printed on soft spongy paper to have each section lined in the inner and outer folds with strips of thin tough paper, and to be sewn in the ordinary way. Books printed on heavily loaded art paper to have each leaf lined with a linen hinge on a throw-up guard. Three tapes, ¼ in. in width, to be used for a pott 8vo, four tapes for a crown 8vo, and the number and width of tapes for books of larger size to be proportionately increased; two of the tapes to be placed respectively within 1 in. of the head and tail of each book.

Broken Sections, Plates, etc. All sections broken at the back to be repaired with guards, and where necessary neatly overcast before being sewn to the tapes; ordinary overcasting will not be allowed except for such cases.

All single leaves, plates, maps and plans to be guarded with linen round the adjoining section and sewn through, and compensating guards added where necessary, unless otherwise ordered. No pasting-on permitted. No charge to be made for the first twenty plates, etc., so guarded in any book unless the book consists entirely (or almost entirely) of plates.

All torn leaves and plates to be neatly repaired. Folded maps and plates to be dissected and mounted on linen, mull, or bank-note paper as directed; this will vary according to the number of plates in the book.

End Papers. End papers to be of good tough paper of approved design with at least one plain fly-leaf between them and the printed matter. The end papers to be made with a linen joint, and sewn on as a section. Slips of good length (not less than 1 in.) to be pasted on to waste end-papers, and these firmly secured within split boards.

Forwarding. Leather-bound books to have French joints, tight flexible back (the leather to be attached directly to the back) and slightly rounded corners, unless otherwise ordered. Books printed on spongy or other paper of poor quality to have hollow backs with a thin leather lining. Books bound in cloth or buckram to have hollow backs with linen linings.

Cutting of Edges. Unless other instructions are given, all books to have the edges accurately cut, care being taken to leave the margins as wide as possible, and sprinkled or tinted with a colour harmonising with the materials used for covering.

Lettering. All books to be lettered in best English gold

neatly on the back with brief title, author's name, and classification number, according to instructions. The top of the classification number to be at a uniform height of 1½ in. from the tail of each book. All lettering to be directly on to the material which covers the back; no title-pieces to be used. The books to be neatly finished with blind fillets unless otherwise ordered. All pattern volumes to be accurately matched in colour of materials and finishing. No injurious composition to be used in finishing.

Labelling. Library labels supplied by the Librarian to be carefully pasted in each book according to instructions.

Alternative suggestions. When the preceding instructions are obviously inapplicable or undesirable, the binder is to submit suggestion for binding, with estimate of cost.

Materials. All leathers (except Persians) to conform to the Royal Society of Arts' standard. The Contractor must guarantee, or undertake to produce when required, the guarantee of the firm supplying the leather, that all skins used (1) have been tanned in sumach, or oak bark, or a mixture of the two, (2) are free from sulphuric or other mineral acids, (3) have been dyed with fast colours, (4) are genuine as described. Leathers not to be unduly pared down or unduly stretched in covering. All half and quarter-bound books to have cloth sides to harmonize with colour of leather used. The corners of half-bound books to be of full size and of the material used for the back. The cloth for the sides to be*.....; and the cloth for whole-bound books to be*..... The buckram to be* ..... The leather cloth to be* ..... Colours of leather and cloth to be as directed. The glue to be best quality flexible glue. Boards to be good quality mill-boards of suitable thickness.

Book Sizes. The size of a book shall be determined by the measurement of the pages when bound, and not of the boards.

Volumes bound together. No extra charge shall be made for two or more volumes bound in one, unless the thickness of such a volume exceeds one half the width of the boards.

88. Diagrams illustrating the arrangement and style of

* The specific cloths, buckrams, and leather cloths should be stated here (for samples and prices see Chapter IV.), and the necessary columns for these should be included in the Schedule.

SPECIAL WORK

	Resewing and Recasing	New Cloth Sides, per pair	Gilt Top	Gilt Edges	Marbled Edges	Raised Bands	
						Plain	Gilt
Demy 18							
Pott 8vo							
Foolscap							
Crown 8							
Post 8vo							
Demy 8v							
Medium							
Royal 8v							
Super R							
Imperial							
Pott 4to							
Foolscap							
Crown 4							
Post 4to							
Demy 4t							
Medium							
Royal 4t							
Super R							
Imperial							
Pott Fol							
Foolscap							
Crown F							
Post Fol							
Demy F							
Medium							
Royal F							
Super R							
Imperial							
Newspap							
(24½							

e those of the next nearest size.

. . . . . .

. . . . . .

the boards . . . . . .

. . . . . .

To face p. 88.

BLANKTOWN PUBLIC LIBRARIES

SCHEDULE OF BOOKBINDING PRICES

SIZES	STYLES								SPECIAL WORK				
	Half Pigskin	Quarter	Morocco Half	Whole	Half Persian	Half Roan	Half Sealskin	Buckram	Cloth	Rescuing New Cloth Sides, per pair	Gilt Top	Gilt Edges	Marbled Edges	Raised Bands Plain	Raised Bands Gilt
Demy 18mo. (5¼ ins. by 3¼ ins.)															
Pott 8vo. (6¾ ins. by 3⅝ ins.)															
Foolscap 8vo. (6¼ ins. by 4¼ ins.)															
Crown 8vo. (7½ ins. by 5 ins.)															
Post 8vo. (8 ins. by 5 ins.)															
Demy 8vo. (8⅝ ins. by 5⅝ ins.)															
Medium 8vo. (9½ ins. by 6 ins.)															
Royal 8vo. (10 ins. by 6¼ ins.)															
Super Royal 8vo. (10¼ ins. by 6½ ins.)															
Imperial 8vo. (11 ins. by 7½ ins.)															
Pott 4to. (7¾ ins. by 6¼ ins.)															
Foolscap 4to. (8⅜ ins. by 6¾ ins.)															
Crown 4to. (10 ins. by 7½ ins.)															
Post 4to. (10 ins. by 8 ins.)															
Demy 4to. (11¼ ins. by 8¾ ins.)															
Medium 4to. (12 ins. by 9½ ins.)															
Royal 4to. (12½ ins. by 10 ins.)															
Super Royal 4to. (13¼ ins. by 10¼ ins.)															
Imperial 4to. (13 ins. by 11 ins.)															
Pott Folio (12½ ins. by 7½ ins.)															
Foolscap Folio (13½ ins. by 8½ ins.)															
Crown Folio (15 ins. by 10 ins.)															
Post Folio (16 ins. by 10 ins.)															
Demy Folio (17½ ins. by 11¼ ins.)															
Medium Folio (19 ins. by 12 ins.)															
Royal Folio (20 ins. by 12½ ins.)															
Super Royal Folio (20½ ins. by 13¾ ins.)															
Imperial Folio (22 ins. by 15 ins.)															
Newspapers (" The Times," etc.) (24½ ins. by 18½ ins.)															

The prices for all books of which the measurements do not correspond to any of the above scheduled sizes, shall be those of the next nearest size.

EXTRAS.

1. Dissecting and mounting maps on linen, per square foot . . . . . .
2. Guarding maps and plates with linen, after the first 20 in a volume, at per dozen . . . . . .
3. Proportion of scheduled price to be charged additionally for books which exceed in thickness half the width of the boards . . . . . .
4. Lining leaves of books printed on heavily loaded art paper with a linen hinge on a throw-up guard, at per 25 . . . . . .

To face p. xx.

lettering required for different classes of books should be sent to the binder whose tender has been accepted, in order to assist him in carrying out a consistent form of lettering; such diagrams are especially advantageous in libraries where a panelled instruction slip is not sent with each book. The following figures, showing various forms of lettering, are given more with the idea of illustrating the principle of these diagrams than as arbitrary forms, although they might with advantage, be copied.

No. 1 shows the lettering for an ordinary book in a classified library. In Nos. 2 and 3 is seen the volume number in plain Arabic figures. There is no apparent advantage in using "vol." or "v.", and the Arabic figure is un-

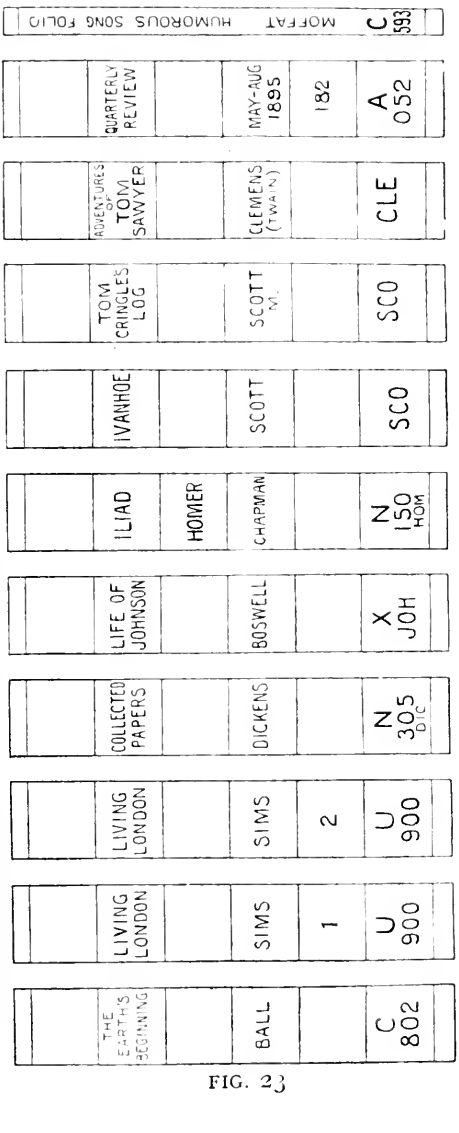

FIG. 23

doubtedly preferable to the Roman, because a smaller symbol is thereby used as a rule, and Arabic figures are comprehended more quickly. No. 4 is an example of the form classes, showing the addition to the class mark of the first three letters of the author's name; this will be found helpful in arranging this class of book in its proper order on the shelves, and will also facilitate reference. No. 5 is a biographical work, the arranging name being that of the subject and not the author. The subject and author of an autobiography being synonymous, the lettering would be shown as in other "form" classes. No. 6 illustrates a case where it is desirable that the name of the editor or translator should be given in addition to that of the author. Nos. 7 and 8 are works of fiction, the latter example introducing an initial to distinguish one author from another of the same surname. No. 9 shows the treatment of pseudonymous or duplex names. No. 10 is a specimen of a magazine volume. No. 11 is an example of vertical lettering suitable for a thin book.

It will be observed that in these suggested forms of lettering the title, author's name, volume number, class or location mark, etc., occupy the same relative position in each case, with the exception of No. 11 where vertical lettering renders it impossible. In libraries where the books are not closely classified, the charging number could take the place of the class number; and in classified libraries where it is necessary that both the class number and charging number should be shown, one or the other could be placed in the top panel.

There are diversities of opinion in regard to the arrangement of the lettering. Most librarians and binders adhere to the orthodox way of placing the title in the leading panel, reserving the lower panels for the author's name and the other necessary particulars. The class, or arranging number is usually placed at a uniform distance, generally about 1½ in., from the tail of the book, thus giving, in addition to a running location, a neat appearance to the books when on the shelves. The arguments urged in support of this practice are: (1) That it is the general custom of publishers to put the titles of their books at the top of the volumes, and the authors' names somewhere near the centre, and it is unlikely that they will alter this method. In the majority of libraries there is always a large number of books in publishers' cases, as well as those in library binding; there-

fore, why confuse the reader by having two different arrangements of lettering? (2) Though there is less fingering at the top of a book while it is being read, there is a greater strain on the top when it is taken from the shelf, and, for this reason, a book is more liable to wear at the head than the tail. Others put the class or location number in the top panel, the author's name in the second, the title in the third, and so on. These contend in support of their practice: (1) That the top is the most prominent panel, and, therefore, in it should appear the arranging number, followed, in the second panel, by the author's name as the secondary arranging symbol; (2) That there is less likelihood of the classification mark being rubbed off, as a person in reading a book does not handle it at the top. Librarians, as well as doctors, are not always in agreement, and it would be futile to suggest general uniformity in the arrangement of binders' lettering; nevertheless it is essential that every library authority should secure uniformity in its own system.

89. A colour scheme should be drawn up, and a copy included in the instructions to the binder. The styles and shades should be selected in the first place, so that the colours may be clearly defined. Unless this is done, it will be found that to the average binder's eye, red, for example, will be any and every thing from the deepest-dyed crimson to the brightest scarlet. The colours can be arranged to distinguish between author and author or between class and class. For instance, books in class A might be red; B, green; C, brown; D, black; E, maroon; F, blue; and so on. Utility, however, is the first consideration; variety of colouring is but of secondary importance. In the past too much attention has been given to the colour question in bookbinding, librarians and others insisting upon brilliant and delicate shades of colour, and even going so far as to reject those leathers that do not exhibit absolute evenness of colour. These regrettable exactions, combined with the hurry with which orders have to be executed, have resulted in manufacturers resorting to the practice of using sulphuric acid for clearing the skins of all grease and animal matter in order to ensure the desired uniformity and clearness of colour. The vegetable dyes, too, that were formerly used, have been discarded in favour of the less durable aniline dyes, which, however, yield a much larger

variety of shades. The Report of the Committee of the Royal Society of Arts has been instrumental in inducing several well-known firms to comply with its recommendations and to guarantee to supply leathers that have not been injured in the process of tanning and dyeing by the employment of sulphuric or other injurious acids. It is now possible to produce leathers with level colouring of almost any shade that is suitable for bookbinding purposes by the use of harmless organic acids (such as formic acid), so that all the requirements of the Royal Society of Arts' Committee will be met. There is little practical value in using a large variety of shades, and by so doing the binder is compelled to carry a stock of leathers (and cloths to match) of certain shades that are seldom required. A distinctive colour for each class is greatly minimised by the fact that the leathers soon lose their original brightness, either by fading or handling; and also that the desired uniform effect is necessarily spoiled by the contiguity of numerous books in their original covers. It may be wise, therefore, to use in the majority of cases, the fastest and best-wearing colours, in particular dark red and maroon, and abandon all secondary considerations.

90. Reference List of Authorities.

Brown, J. D. "Bookbinding." In his *Manual of Library Economy*. 1907. pp. 292–9

Cockerell, D. "Specifications for Bookbinding." In his *Bookbinding and the Care of Books*. 1906. pp. 308-311.

Royal Society of Arts. *Report of the Committee on Leather for Bookbinding*. 1905. pp. 31-36.

CHAPTER VIII

RECORDS AND CHECKS

By Henry T. Coutts

91. Simplicity is an important factor in the success of a business record, and must not be overlooked by the librarian when devising a method of registering books sent to the bindery. The bookbinding record, however, while being as simple as possible, must effectively fulfil a fourfold purpose, namely:

(1) Instruct the bookbinder;
(2) Show clearly what books the binder has in hand at any given time;
(3) Act as a check on the books, when returned;
(4) Form a register of books bound.

Of the various systems in use, two stand out as being at once the most common and most effective. These may be described respectively as the "sheet" and the "slip" methods.

Where the sheet method is employed, the instructions to the binder are written on separate sheets or folios having a ruling similar to that shown in Fig. 24. The entries are copied into a register, known as the Binding Book, which is a counterpart in book form of the loose sheets. It will be seen that the requirements of items 1 and 3 are fulfilled by the entries on the loose sheets, while the duplicate entries in the binding book effect the purposes of items 2 and 4.

The two parts of the register are sometimes combined, each printed sheet, perforated, being followed by a counterpart in the binding book. The principle involved is much the same as that of a tradesman's invoice book, the entries being made simultaneously by the aid of carbon or other copying paper. This method has an advantage in the matter of time, and also ensures that the one record is an exact copy of the other; but it is necessary to change the carbon paper frequently, otherwise the copy will be indistinct.

BLANKTOWN PUBLIC LIBRARY

BINDING SHEET

Department — Despatched

Binder — Returned

Progressive No.	LETTERING		Vol.	Class or Book No.	STYLE	SIZE	PRICE	REMARKS	
	Title	Author						Librarian's	Binder's

FIG. 24 (Section 91).

Another method is to make the necessary entries, on loose sheets, in copying ink. The particulars are then transferred, in the ordinary way, to a letter copying book used solely for this purpose. When the volumes are returned from the bindery, the entries may be cancelled by filling in the date of receipt in blue or other distinctive coloured ink or pencil.

92. The "slip" method is in some respects similar to the "sheet," but differs inasmuch as the information for the guidance of the bookbinder is written on separate slips which can be enclosed in the books to which they refer. By this means each book can be dealt with individually, and the binder is thus given more freedom in the distribution of work in the bindery. The arrangement of lettering also can be shown more clearly on a slip divided into panels, typifying the back of a book, than on an ordinary binding sheet. There is, however, an objection to the slip from the binder's point of view, and that is, if one or more books should inadvertently go astray, there is no means of knowing what to look for except by recourse to the librarian. This objection could, of course, be met by a simple system of booking on the part of the bookbinder, or a brief author and title check-list could be prepared by the librarian and sent with each batch of books. If slips be used, without a check-list, an advice-note, stating the number of books despatched, should be sent to the binder so that he may check the number immediately on receipt. A convenient form of slip, approximately $6\frac{1}{2}$ in. + $3\frac{1}{2}$ in., is shown in Fig. 25.

The slips in use at the Library of Congress (U.S.A.) are similar in principle, but longer, being $8\frac{1}{2}$ in. long by 3 in. wide. The upper portion of the slip is divided into panels, and has the following heading:

Note especially directions below about trimming, etc., edges.

LIBRARY OF CONGRESS

Req. .....

BLANKTOWN PUBLIC LIBRARY

No. ..... Date sent .....

Dept. ..... Size ..... Price .....

Material and Colour

LETTERING

SPECIAL INSTRUCTIONS OR REMARKS:

This space to be used for vertical lettering on thin books

FIG. 25 Binding Order Slip. (Section 92.)

In the lower portion of the slip, the instructions to the binder are very fully set out, as will be seen by the examples here given. Several forms of this slip are in use, differing in the binder's instructions, and in colour.

INSTRUCTIONS TO BINDER

Bind front covers as they are; "ads" and back covers at back as they are
Do not trim edges
Material: Half Morocco Cowhide Light Duck Dark Crash Silk Cloth Buckram SPh
Color: Red Black Brown Dark Green Blue Label (when used noted here)

Make dummy inclosed

Pattern volume

INSTRUCTIONS TO BINDER

Bind front and back covers at back
Trim all edges **Lightly** and marble
In trimming leave as wide a margin as possible irrespective of size of dummy or pattern volume
Bind in Half Cowhide Morocco Boc Buffing SPh Crash Silk Cloth Duck Buckram
Color: Red Black Brown Dark Green Blue
Red Black Brown Green Blue
Label not filleted

Pattern volume

INSTRUCTIONS TO BINDER

Bind front covers as they are; "ads" and back covers at back as they are
Trim **top** edge **only** and marble; **trim lightly**
leaving all other edges **untouched** slightly pared but **rough**
Bind in Half Morocco Boc Cowhide Buffing SPh Crash Silk Cloth Duck Buckram
Color: Red Black Brown Dark Green Blue Label (when u ed noted here)

Make dummy inclosed

Pattern volume

INSTRUCTIONS TO BINDER

See first slip, pattern or dummy for DIRECTIONS

Changes in title are noted above

These specimens are shown to illustrate the methods employed in a large National Library; the several and varying forms would be superfluous in ordinary public libraries. The more general form, given on the opposite page, will meet common requirements.

A form which utilises both sides of the slip may be used, if considered desirable, in which case, instructions as to lettering would be shown on one side, and general particulars on the

Progressive No.	LETTERING		Vol.	Class or Book No.	STYLE	SIZE	PRICE	DATE		REMARKS
	Title	Author						Sent	Returned	

FIG. 26. Binding Register (Section 93).

other. This duplex form of slip gives a double amount of writing space, but is disadvantageous inasmuch as the majority of binders, while a book is in process, attach a corner of the slip to a page of the book (generally that facing the back of the title page). It is, therefore, more convenient to have instructions written on the face of the slip only.

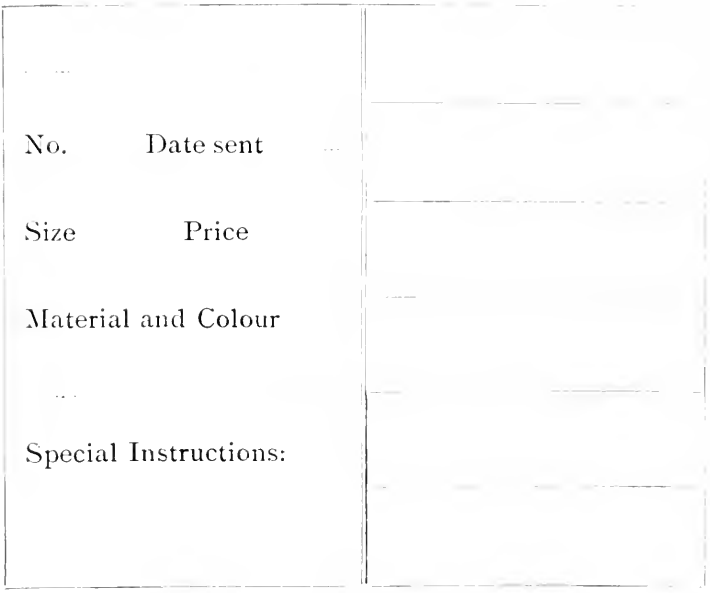

FIG. 27. Binding Register on Cards.

93. Before sending the slips to the binder, the items are duplicated as in the case of the "binding sheets." It is the general practice to use for this purpose a binding book giving the particulars shown in Fig. 26.

The register, instead of being in book form, could be kept in the form of a card catalogue. In this case it would be necessary to make a slight alteration in the style of slip used. The principle of duplication would again be applied; a card or slip (Fig. 27) being sent as the binder's instruction, and its counterpart filed at the library.

BLANKTOWN PUBLIC LIBRARIES **BLAN**

T Binding No. T

Style Colour Price Style

Outside height must not exceed

9$\frac{7}{8}$-in. **11**$\frac{7}{8}$-in. **15**$\frac{3}{4}$-in.

☞ Send Accounts in Duplicate, and quote binding numbers only, not authors nor titles. Return in binding number sequences. ☞ bindi Ret

FIG. 28. Binding Order Slips in Book Form (Section 93).

A binding register on cards possesses the advantages of the card catalogue, chief of which are freedom of arrangement and adaptability, but the large amount of space which it occupies is a great disadvantage.

Another plan is to have a book of slips, several slips to a page, perforated and progressively numbered, with a counterpart page unperforated. The slips when written are at the same time copied on to the counterpart page by the aid of carbon paper, the impression thus made forming the permanent record when the slips are torn out. The foregoing example (Fig. 28) will serve to illustrate the form of such a book. The size of the slip is about $5\frac{1}{2}$ in. by $3\frac{1}{4}$ in. There are six slips to a page, in two rows of three. The page behind each set of slips is printed exactly as the slips, but is not perforated. The letter in the top left-hand corner typifies the library or department to which the book belongs.

A variation of the above-named method consists of a book of slips, similar in principle, but different in form, and less perfect in detail. Such a book is outlined in Brown's *Manual of Library Economy*, the ruling, shown in Fig. 29, being taken from that work.

Library systems, particularly those with a number of Branches, are advised to adopt distinctive coloured slips or sheets, or a plain distinguishing mark or letter for each department. It often happens that there are batches of books from several departments of the library in the bindery at the same time, and it is desirable, in view of the fallibility of the binder's assistant, that the books belonging to a particular library or department should have some distinctive mark by which they may be readily recognized.

In libraries where the card-charging system is in operation it is customary to take the bookcards relating to a batch of books for binding, and to arrange and charge them to the bookbinder. This forms a temporary register showing what books the binder has in hand, but on account of its temporary nature it should be used in conjunction with, and not instead of, a more permanent record.

When the work is completed, the sheets or slips should be returned to the librarian for checking purposes. Here again the slip has a slight advantage over the sheet in that the instruction relating to any one book is quite independent of

Progressive No.	Date of Despatch	Lettering	Class	Material	Date Returned
1					
2					
3					
4					

FIG. 29. Binding Order Slips in Book Form (Section 93).

any other. On the other hand, should it be necessary to invoice full particulars of every book bound, the sheet method, as is afterwards explained, is in this connexion the more expeditious.

94. Whichever method be adopted, a progressive number should be employed. By means of this number a quick reference from the binder's instruction to the library record can be made, and the work of checking greatly facilitated. A consecutive number also enables one to tell at a glance how many books have been bound during a given period; and, if thought desirable, the number may be carried into the books themselves, or other library records, for the purpose of showing how often a book has been rebound, the date of rebinding, the price paid, etc. It is the practice in some libraries to stamp the date of receipt on a certain page of every book returned from the bindery.

The official order should serve as an advice note, stating the number of books sent, and might be framed thus:

> Please bind, as per contract, ... volumes sent herewith, according to the detailed instructions given on the accompanying slips (or sheets), Nos. ..... to ..... The slips (or sheets) must be returned when the order is completed.

This order note should have its parallel in the binding book in the form of a receipt at the foot of the respective entries, signed by the binder's messenger. Should the bindery be situated at a distance, necessitating the transmission of books by carrier, a loose receipt form with a similar wording might be used.

> Received from the ..... Public Library ..... volumes for binding; slip (or entry) numbers ..... to ..... inclusive.
> Date ..... Signature .....

The form of invoice will vary according to the requirements of local authorities. In many cases a detailed invoice is considered to be unnecessary, and the items may be grouped, as shown in Fig. 30.

NO. BOUND	SIZE	STYLE	PRICE PER VOL.	£	s.	d.	CHECKED BY	REMARKS
3	Demy 4to . .	½ morocco . .						
10	Demy 8vo . .	,, . .						
50	Post 8vo . .	cloth . . .						
12	Crown 8vo . .	,, . . .						

FIG. 30. Binding Invoice Form (Section 94).

Where local circumstances render it necessary that the various items should be set out in detail, and where binding sheets are in use, the sheets may be adapted to serve as an invoice, as in the following example (Fig. 31), and a statement, worded as follows, attached to them: To binding ..... vols. as per binding sheets, and in accordance with contract. If the slip system is in operation, an invoice form on similar lines must be provided.

When checking books returned from the bindery, care should be taken to see that they are bound according to specification. The work of checking is more or less mechanical, but it is desirable that the checker should possess, in addition to a keen eye and ordinary intelligence, some knowledge of materials and workmanship.

The mechanical side of the work, i.e. the verifying of sizes and prices may be facilitated by the use of a book-scale. One of the simplest and best forms is that given as a supplement to this book. To ascertain the size of a book, fit it into the left-hand bottom corner of the scale, or place the scale accurately in the book, and the size and price will be seen immediately above the top edge of the book.

Instead of the flat scale, a book-rule may, if preferred, be used in conjunction with a list of prices. In many respects the book-rule is like an ordinary large rule, the difference being that the standard sizes of books are marked upon it. A fairly accurate and well-made rule is manufactured by Messrs Kelly and Sons, 7 and 8 Water Street, London, W.C., and sold at a price of 1s.

95. To secure uniformity in binding, and to ensure an effective check, it is suggested that each librarian should draw up a code of rules, in addition to the specification, for the guidance of those members of the staff concerned in the despatch and receipt of books to and from the bindery. Appended are certain staff instructions and aids, based upon those in use at Croydon and Islington, which, with the modifications necessitated by individual methods, are capable of general application.

Bookbinding Instructions for Staff Use.

Preparatory Work.

1. Include all books placed aside for binding or rebinding, except:

BLANKTOWN PUBLIC LIBRARY

Bookbinding Account

Dept.

Binder

Date

Date sent

Progressive No.	Title	LETTERING Author	Vol.	Class No.	STYLE	SIZE	PRICE	CHECK MARK	REMARKS

FIG. 31. Binding Invoice Form (Section 94).

(*a*) Those which can be repaired on the library premises;
(*b*) Very dirty books;
(*c*) Books printed on bad paper, or with many sheets torn at the folds;
(*d*) Books resewn or recased in home bindery, unless clean and printed on good paper;
(*e*) Imperfect books. [If a section, or part of a section, be missing from a book in print, apply to the publisher for the missing portion; if it cannot be supplied, either withdraw the book or bind the book leaving sufficient guards.]

2. Arrange books in classified order; write the necessary entries on the slips (or sheets) provided for the purpose. If slips are used, place them in the books to which they refer.

3. The lettering is to be as brief as is consistent with clearness, containing only, but always, the *essential wording*. When books are rebound, the particulars as to author and title should be taken from the title page; the former binder's title should not be copied blindly. The arrangement of lettering is to be in accordance with the official diagrams appended to "Specification" (*see* Chapter VII). For thin books, adopt vertical lettering, and instruct the binder to pad at end, where necessary, with blank sheets so as to take the lettering easily.

4. The styles to be used are:

A Morocco (or Seal).
B Half Morocco (or Seal).
C Quarter Morocco.
D Half Pigskin.
E Half Persian Morocco.
F Half Roan.
G Cloth.
H Buckram.
J Leather Cloth.

Each librarian has his or her own views as to the various styles in which particular books should be bound. Probably the following may commend themselves. For valuable works and éditions de luxe use A (whole morocco or seal); for well-produced books that are likely to last for many years and to be fairly well used, B (half morocco or half seal); for small books printed on good paper, C (quarter morocco); for large

books printed on paper of heavy texture, in frequent demand, D (half pigskin); for books printed on strong paper calculated to last with constant wear for a few years only, E (half Persian); for popular books printed on paper of medium quality, of ephemeral interest, F (half roan); for popular books printed on spongy or feather-weight paper, and the smaller books in occasional request, G (cloth); for the heavier type of book only occasionally required, H (buckram or a heavy cloth); for juvenile books, and as an alternative to cloths and leathers that would be used on popular books, J (leather cloth).

5. Arrange colours according to a definite scheme. [The colours can be arranged to distinguish between authors and between classes. Quiet shades, particularly dark red and maroon, have been found to be most durable, and should be largely used.]

6. Carry the particulars from the slips (or sheets) into the Binding Register, unless this has already been done by a copying process.

7. Send a pattern volume to the binder when it is desirable that a book should be bound uniformly with other volumes; or, take a rubbing of each serial, write the necessary instructions on the back in engrossing ink, and send to binder.

[The rubbing is thus prepared: Take a piece of white tracing linen or paper, and cut it to the length and breadth of the back of the volume of which the rubbing is required. Hold tightly in position, unglazed side upwards, and with a cobbler's heelball rub carefully, yet vigorously, in one direction only, until the rubbing becomes a recognizable copy of the back of the volume; all lettering and tooling being nearly white, the rest dark, and all projections darker.]

8. Characteristic bindings should be preserved, and special instructions sent to the binder. Before dealing with these books, submit them to the librarian.

Receipt of Books from the Binder.

9. Examine the books to see that the binder has carried out the work according to specification, and according to the instructions given on the binding slips (or sheets).

10. Check size and price with the assistance of the Book Scale (or rule).

11. Tick off the items, if correct, on the binder's invoice. Should it be necessary to return any books for correction, pencil the particulars against the items concerned.

12. After checking, arrange the slips (or sheets) in the same order as the entries appear in the Binding Register, and cancel the entries by filling in the date of return.

13. Before recirculating the books, carefully open them, beginning simultaneously at each end, and working towards the centre of the book. (*See* Section 162).

96. Reference List of Authorities.

Caldwell, M. R. "Preparing for the Binder." *Public Libraries*, vol. XI, 1906, pp. 302-3.

Coutts, H. T. "Bookbinding: Orders and Checking." *Library World*, vol. X, 1907, pp. 115-8.
[Reprinted in *Library Economics*, 1909, pp. 39-44.]

Stevenson, Robert. "The Binding of Serials." *Library World*, vol. III, 1901, pp. 266-7.

Swezey, A. D. "Binding Records." *Public Libraries*. vol. XIV, 1909, pp. 5-7.

CHAPTER IX

HOME BINDERIES AND REPAIRING DEPARTMENTS

By Henry T. Coutts

97. A Home Binding or Book-Repairing Department is becoming generally recognized as an essential part of the administration of the larger public library systems. These departments, according to the size and work of the institutions which they serve, vary from a place set apart for the treatment of minor repairs, presided over by a book-repairer whose principal stock-in-trade is a plentiful supply of paste and a few brushes, to a properly equipped bindery, where, in addition to the treatment of book-repairs, bookbinding is executed in its entirety. The term "home bindery" is sometimes used in a general sense, and may mean either the one extreme or the other, or anything between them. A distinction, however, should be drawn between what is literally a home bindery, and what is only at its best an organized book-repairing department. In its literal meaning a home bindery may be defined as a bindery on, or in conjunction with, the library premises, possessing a complete bookbinding and book-repairing plant, and the necessary materials, and managed, under the direction of the librarian, by one or more qualified bookbinders. Such binderies are only applicable to large library systems, where a big turn-over of bookbinding justifies the expense involved in buying the necessary appliances and materials, and paying the wages of qualified workpeople.

98. Home Binderies have been established in several British and American public libraries, other than those of the British Museum and the United States Library of Congress. The national and largely endowed libraries naturally stand on a different basis from the ordinary rate-supported libraries, and cannot, therefore, be quoted for comparative purposes.

LIBRARY	VOLUMES *			OTHER ITEMS	EMPLOYEES	COST			REMARKS
	Re-bound	Recased or Re-covered	Class Letter'd or Num-bered			Wages	Material	Plant	
1	5524	Not stated	10143	Repairs; Maps mounted, etc.	Not stated	£433 11s. per ann. (including insurance)	£122 7s.	Not stated	Work done for other departments amounted to £35 5s., making a net cost of £520 13s. 4d.
2	2864	2271	Not stated	41 Repairs in addition to minor repairs	1 man 2 women	38s. per week 14s. each per week	£28 13s.	About £50	
3	977	1206	Not stated	8215 minor repairs; reading cases, files, etc.	2 men 2 women	27s.6d.each per week 12s. each per week	£19 10s.	£35 (second-hand)	Estimated profit on year's work, £9 5s 11d.
4	553	720	1562	Repairs; mounting maps, plates, etc.	1 man 2 girl sewers	30s. per week 14s, & 7s. per week	Not stated	About £40	Eleven months' work. A small saving.
5	220	4020	3750	12750 minor repairs; pasting in bookplates, etc.	1 man 1 girl	30s. per week 12s. per week	£10 10s.	Ann. int. on plant estimated at £2	Estimated saving of £40 per annum by the provision of the department
6	150	2235	Not stated	Minor repairs; magazine cases made, etc.	1 man 1 woman	31s. 6d. per week 14s. per week	£10	About £15	Work better and more expeditiously done than if placed outside

* The period under review is one complete year, unless otherwise stated.

LIBRARY	VOLUMES[a]			OTHER ITEMS	EMPLOYEES	COST		REMARKS
	Bound or Re-bound	Re-cased or Recovered	Class Lettered or Numbered			Wages	Material	
1	25750	1974	10231	Minor repairs; 465 magazine cases made	7 men 11 women	Not stated	Not stated	Work done by an outside firm, under contract, but on the library premises.
2	13582	—	Not stated	60835 minor repairs; magazine cases made, etc.	1 foreman 4 girls 2 boys	$23 per week $5 to $8 per week $5 and $4 per week	Not stated	The library possesses its own bookbinding plant, but the work is done on the premises by an outsider at an agreed price per volume, according to specification. The Library Authority supervises the work, but has no control over employees. Librarian states that the library "binding is about 5 cents less per volume than that done for outside parties." Total cost of binding for the year 1907, $5074·15.
3	8500 522 (Ref.)	335 (Ref.)	Not stated	Minor repairs, etc.	4 men 3 women	Ranging from $70 to $25 per month	$600 $295·99 (Ref.)	No expenses charged to bookbinding department other than wages and cost of material.
4	6402	18	3629 (6 months only)	7476 general repairs; 614 magazine cases made; maps mounted, etc.	1 foreman 1 finisher 2 sewers	Not stated	Not stated	Work done on the library premises by outside contractor. No special saving in money but greater convenience, particularly as regards the safety of the books and the promptness of the work.

[a] The period under review is one complete year, unless otherwise stated.

Among the municipal public libraries that have established home binderies are Aberdeen, Brighton, Bristol, Derby, Hull, Portsmouth; and Newark, New York, Pittsburgh, and Washington, U.S.A. The foregoing tables of particulars, arranged according to the size and work of the several binderies, have been compiled from information courteously given by the librarians of the institutions concerned. It will be seen that in a number of American libraries there are binderies on the premises, but the work is done by outside contractors employing their own staffs. In this connexion it is interesting to note the opinion of Mr G. F. Bowerman, Librarian of the Washington Public Library, who says: "We think ours is the ideal way. We have all the advantages of having our bindery, without the risk of loss or the responsibility of employing the force. But we have exactly the right man as our contractor and he employs a good foreman. He tries all sorts of new experiments for us, so that we do not need to stagnate."

99. Few library authorities, owing to the comparatively small number of books which require rebinding, consider themselves justified in providing home binderies. It may be possible, however, for several of the smaller libraries to co-operate for the purposes of bookbinding, and to establish a joint bindery in a convenient centre. Such co-operation might present difficulties in isolated provincial towns, but in many instances it would be both feasible and beneficial. Mr J. D. Brown, in his *Manual of Library Economy*, gives it as his opinion that "a joint-stock or co-operative bindery could be worked by the London Metropolitan Borough Libraries with considerable prospects of success and economy." The suggestion of a co-operative library bindery, particularly as regards London, deserves further and careful consideration by the several library authorities.

Although the adoption of a home bindery in its literal sense is not advocated, save in the case of the larger library systems having an annual binding bill exceeding £300, the smaller libraries, especially those of a medium size, would do well to consider the provision of book-repairing departments. These departments should be thoroughly organized, placed under the control of a qualified book-repairer, and possess facilities for the proper treatment of minor repairs, re-casing, and lettering in gold on the backs of books. Librarians who

have had practical experience of such departments are generally agreed as to their efficacy and economy. Book-repairing departments have been established in several British libraries, including Croydon, Glasgow, Islington, Manchester, Nottingham, and Sunderland. The following statement of the work of the repairing department of the Croydon Public Libraries, for one complete year, will give a general idea of the scope (exclusive of class numbering) and cost of a book-repairing department for a library system having an approximate annual income of £4,500.

21 Pamphlets were bound.
672 Volumes were re-sewn or re-cased.
10,761 Volumes requiring slight repairs were dealt with.
57 Magazine cases were made or repaired.
125 Maps, etc., were mounted.
3,237 Various jobs were done, including such items as re-backing pictures, mounting photographs, making and repairing cloth-bound trays and boxes, files, etc.

One woman was employed at a salary of £52 per annum, and the cost of materials for the year under review was about £7. The repairing plant, excluding finishing apparatus, cost about £12.

In some instances a room is set apart for the repairing of books, and the work is done by one or more men sent from an outside bindery, as in the case of the Worcester County (U.S.A.) Law Library. This practice, however, seems to be more common in the United States than in the United Kingdom.

A small lettering or finishing outfit should be added to the repairing plant for the purpose of printing the class number or other library mark on the backs of the books. Such provision might also be considered by librarians whose libraries do not contain organized book-repairing departments. Several libraries included in this category—for example, Finsbury, Fulham, and Hampstead—have provided themselves with the necessary apparatus for numbering their books with gold-leaf, and have in this way solved the tagging problem. The opinion of Mr Doubleday, Borough Librarian of Hampstead, is of interest in this respect. He says: "I am quite satisfied that book-numbering with gold-leaf can be done neatly and effectively by an ordinary junior assistant, and that it is highly

desirable for libraries to undertake this slight task, both on the score of economy and of promptness in dealing with books."

100. The benefits to be derived from the establishment of home binderies or book-repairing workrooms may thus briefly be summarized:

1. Minor repairs can be done by skilled hands, which otherwise, owing to want of time and technical knowledge, will in all probability be very imperfectly and less expeditiously done by ordinary members of the library staff.

2. The larger repairs, instead of being sent to an outside binder, can be dealt with on the library premises.

3. Owing to publishers' methods of sewing, and the poor quality of book-papers generally, large numbers of books break away from their covers while the latter are in good condition. Such books can, with advantage, be re-cased on the library premises. Otherwise the librarian has to choose whether he will discard these books; ineffectually patch them up; or send them to the bookbinder to be re-cased or rebound, when, on account of the poor quality of the paper, it is doubtful if the price of rebinding will be justified.

4. Work done on the library premises is under the personal supervision of the librarian, and is, therefore, more likely to be carried out strictly according to specification.

5. The employees will of necessity become specialists in library bookbinding and repairing.

6. Books can be treated with greater despatch, and will not be kept long out of circulation at times when they are probably most needed.

7. The binding bill will be reduced by a saving of the middleman's (or master-binder's) profit; although a bookbinder in a large way of business would naturally get his materials at a cheaper rate than the library authority.

101. Taking for granted that a home bindery in some form or degree is desirable, an outline is here given of the requirements of a home binding department for an average medium-sized library; the modifications necessitated by local conditions being left to individual librarians.

Accommodation and Arrangement. The matter of accommodation is so largely governed by local circumstances that it is difficult to lay down general rules; but the following conditions should be observed as far as possible:

The repairing department should be a separate room, away from the public eye and ear, but situated so as to be easy of access to and from the lending and reference libraries, in order to minimise the labour involved in the conveyance of books.

The room should be lined with enough shelving to store comfortably the maximum number of books that are likely to be in process at any given time.

A fair-sized table or bench should be provided, a gas ring for heating the glue-pot, and a gas point to which the finishing stove can be fixed. Electricity may, if preferred, take the place of gas.

The natural and artificial light should be good, and the room as commodious as possible.

THE BINDER-REPAIRER. The qualifications of a book-repairer (or binder-repairer) are a practical knowledge of book-sewing and forwarding, and a knowledge of finishing sufficient for the purpose of printing class symbols in gold on the backs of books. The duties of the repairer embrace:

1. *Minor Repairs:*
   (*a*) Replacing loose leaves.
   (*b*) Mending cut and torn leaves.
   (*c*) Mending torn covers.
   (*d*) Removing dirt and other stains.
2. *More Advanced Repairs:*
   (*a*) Replacing books having their sheets still strongly sewn, that have broken away from their covers, in their original covers, provided they are in fair condition.
   (*b*) Separating the sections of books that have become unsewn, resewing and replacing them in their original covers, provided they are in sufficiently good condition to allow of their being used again.
   (*c*) Renovating old books that cannot be replaced, and which it is impossible or inadvisable to rebind.
3. *Subsidiary Duties:*
   (*a*) Placing books aside for rebinding, to be dealt with by an outside binder, unless there are facilities for complete binding on the premises.
   (*b*) Impressing in gold the location or class numbers on the backs of books.
   (*c*) Mounting maps on linen, jaconet, or other material.

(*d*) Making magazine cases, files, and articles of a like nature.

The salary of the repairer will, of course, vary according to locality and in proportion to what is required of him or her. A capable sewer and repairer (female) can be obtained from 15s. to £1 per week, but if much lettering be required, in addition to recasing, it may be advisable to appoint a qualified man at a correspondingly higher salary. In the trade, sewing is invariably done by women, and forwarding and finishing by men, but it is only the larger library systems that can afford to adopt this twin principle. The trade aspect with regard to the employment of a binder on a time agreement is that he shall be properly located, and paid the trade union rate of wage. At the present time the minimum weekly wage in London is 36s. for finishers and 35s. for forwarders; in the provinces the rates vary in different localities, the average wage being about 33s. for forwarders and 36s. for finishers.

102. Tools and Appliances. In the following list an attempt has been made to give a fair idea of the scope and cost of a small bookbinding plant. The items can be extended or reduced according to individual requirements. For instance, in certain cases it may be found desirable to substitute a wooden nipping press at a cost of about £1 15s. for the iron one at £4 10s.; but such a course is recommended only on the ground of initial economy; the wooden press is naturally less durable and less efficient. On the other hand, additional sets of type may be required, and a small guillotine might be added at a cost of about £7 10s. The finishing stove and glue-pot may, if desired, be heated by electricity. A set of handle letters can be obtained at about the same price as a set of brass type, and is to be preferred if used for mixed numbering only. The type set in a holder has a distinct advantage in line work, and where many books have the same lettering or numbering.

	Approximate cost. £	s.	d.
Sewing press (20 in. between screws) with ½ doz. keys		9	0
Cutting press, with pin, plough, and knife	1	16	0
Open tub (or close tub and cover at £1 15s.)		15	0
Nipping press (iron, 18 in. by 12 in.)	4	10	0
Pair millboard shears		18	6

	£	s.	d.
Pair hand shears		2	6
Cutting-out knife			10
Paring knife			10
Short knife			7
Steel straight-edge (15 in.)		3	0
Zinc plate for cutting on (20 in. by 13 in.)		2	6
2 Bone folders (thick and thin)			10
Knocking-down iron		3	6
Backing hammer		2	6
2 Pairs backing boards (octavo and folio)		1	6
*2 Pairs pressing boards (quarto and folio)		7	0
Paste tub		3	0
Glue pot (2 pints)		3	2
2 Paste brushes		5	0
2 Glue brushes		2	0
Gas ring for heating glue		5	0
Square		1	6
Pair dividers		2	6
Pair trindles		1	3
Ragstone			6
Sandstone			3
	£10	18	3

Finishing Apparatus.	£	s.	d.			
Finishing press		16	0			
2 Sets brass type (or 2 sets of handle letters)	1	12	0			
Type holder		7	6			
Gas finishing stove (for bench)		15	0			
Gold cushion (with drawer)		8	6			
Gold knife		1	6			
Burnisher		4	6	4	5	0
				£15	3	3

MATERIALS. When considering the purchase of materials, the following list, giving the approximate cost of each item,

*When more than one book is pressed at a time, a few stout millboards of the same size as the pressing boards will serve to go between the intermediate books.

may serve as a guide. It is impossible to give exact amounts, owing to the fact that prices fluctuate; that materials of one sort bought in large quantities are proportionately reduced, and that there are various qualities of the several materials. When purchasing bookbinding materials, it is well to bear in mind that the cheapest article is dearest in the long run. Care should also be taken to avoid imitations, especially when purchasing leathers and book cloths.

		Approximate cost. £	s.	d.
Unbleached linen tape (in pieces of 12 yds)	per doz. . .		2	3
Linen thread (best quality)	per lb. . . .		3	6
Needles	per packet .			4
Mull (in pieces 40 yds. by 36 in.) . .	per piece . .		6	0
Glue (best Scotch)	per 28 lbs. .		15	0
Glue (flexible)	per 28 lbs. .	1	1	0
Preserved paste	per 28 lbs. .		3	0
Millboards (hand made)	per cwt. . .	1	9	0
End papers (printed design, double crown)	per ream . .	1	0	0
White lining paper (double crown) .	per ream . .		7	6
Jap tissue paper	per ream . .		3	9
Cloths	per yard 6d. to		1	3
Buckram	per yard 1s. 1½d. to		1	6¾
Leathers:				
Roan	per skin . .		3	0
Persian	per skin . .		3	0
Oasis Morocco, between 6d. to 9d. per foot	per skin of 5 to 7ft.		3	0
Cape Morocco, between 10d. to 1s. 4d. per ft.	per skin . .		8	6
Sealskin, between 1s. to 1s. 4d. per sq. foot,	per skin . .		17	0
Pigskin, between 8d. to 10d. per ft.	per skin . .		8	0
Gold leaf (best English)	per 100 leaves		5	0
Gold rag	per yard . .			7
Glaire (dry)	per lb. . . .		3	6
Glaire (wet)	per pint . .		1	0
Blocking powder	per lb. . . .		6	0
Cocoanut (or olive) oil				2
Cotton wool	per lb. . . .		1	9

		£	s.	d.
Bottle rubber	per piece . .		1	0
Varnish	per pint . .		2	6

103. DETAILS OF WORK. The work of the home bindery is, of course, principally concerned with book-repairing and binding, details of which will be found under their respective chapter headings. There are, however, certain subsidiary branches of work which can, as a rule, be fitted in during the intervals of book-repairing. The more important of these are stamping in gold the location or class numbers on books not bound in library binding, mounting maps and pictures, grangerising, making magazine or reading cases, and files for various purposes.

Lettering. When once the technical details have been mastered, the work of numbering or lettering in gold on the backs of books should present little difficulty to a person of average intelligence. If the operator is a novice he will need a certain amount of practice before he attains proficiency, but, by carefully following the instructions here given, he should be able in a short time to letter neatly and legibly.

Take a batch of from twelve to twenty books, and, with a sponge, apply glaire to the parts of the books which are to receive the lettering. The glaire should be prepared as directed in Section 154. Allow the glaire to become thoroughly dry; then apply a little cocoanut or olive oil with a piece of cotton wool. Now take a leaf of gold from the book, and lay it on the gold-cushion by sliding the gold-knife under the leaf. If the leaf does not lie perfectly flat, breathe slightly on the middle. Prior to this operation, both sides of the knife should be rubbed on the cushion, and care should be taken not to grease the blade by contact with the hand. Cut the leaf into pieces, according to the sizes required, by carefully placing the gold-knife on the leaf, and passing the knife backwards and forwards with a gentle sawing-like action. A little powdered brickdust previously rubbed on the gold-cushion will facilitate the cutting of the gold. Now take a clean piece of cotton wool and slightly grease it so that it may pick up the gold and transfer it to the book. Very little grease is required for this purpose, and in order to get just the right quantity it is a good plan to rub a little oil on the back of the hand and draw the wool over it. The book to be lettered is now screwed up in the finishing press.

The finisher has the choice of two methods; he can use either a "fount" of types or separate handle-letters. In the former instance the types are set up and screwed tightly together in a type-holder, and the line worked across the back of the book in one motion. Where a set of letters or figures is repeated to any appreciable extent, this method has an obvious advantage; but for the mixed numbering required by the average library, the separate or "handle" letters are the more convenient.

To illustrate the process of lettering we will imagine that the class symbol U**950** has to be impressed (see Fig. 32); the thin line round the symbol represents the gold leaf. Having arranged the lettering irons on the finishing stove, proceed to test them to see that they are of the right heat; this is done by trying them on a wet pad or sponge, and judging by the hissing. The correct heat is indicated by a slight hiss only. If there is a loud hiss, and the water disappears immediately, the tool is too hot; if, on the other hand, the water very slowly evaporates it is not hot enough. If the irons are too hot they will burn and darken the gold, and if not hot enough, the gold will not adhere. For cloth work the irons should be rather hotter than for leather.

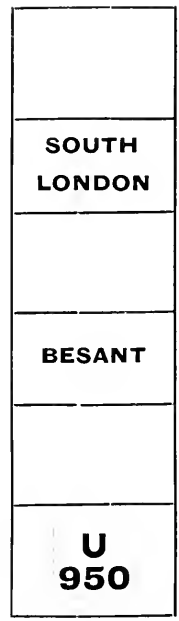

FIG. 32

Take up the letter U first, and having rubbed it on a piece of leather to brighten it, hold the handle in the right hand with the thumb on top, steady the bottom or letter end with the thumb of the left hand, and carefully and firmly press it on the gold. Then take the 5 and print this directly underneath at a short distance below the U. Now stamp the 9 a little to the left of the 5, and the 0 a corresponding distance to the right. Care must be taken to work the figures in a perfectly straight line. "Dodges," such as marking lines across the gold-leaf with a blunt-pointed instrument, or laying a piece of thread or silk weighted at each end across the gold, are sometimes resorted to; but for short lines these are

seldom necessary, after a little practice, if due care be taken.

When all the books in a batch have been lettered, take what is known as the gold-rag, and wipe off the gold not wanted. The gold-rag is generally a piece of canvas which has been well greased so that the fragments of gold will attach themselves to it. A piece of bottle-rubber should be used to remove any superfluous gold that remains after the application of the gold-rag.

104. *Magazine or Reading Cases.* A neat and serviceable magazine case may be made as follows: Cut millboards the size required; cover with a durable book cloth, leaving the requisite thickness between the boards to form the back or hinge; strengthen the hinge by glueing a strip of material inside and line with stout end-paper. It is a good plan to have several stock sizes, so that a number of cases can be made at slack times, and kept in readiness for use. The following sizes will meet general requirements:

10½ in. by 7¼ in.	13¾ in. by 10¾ in.
12 in. by 9¾ in.	15½ in. by 11¼ in.
	18 in. by 12½ in.

Letter files. Handy letter files can be made by cutting two pieces of cardboard or stout manilla to the required size, and glueing a strip of linen or bookbinders' cloth to form the back or hinge. Many jobs of a similar nature may be effected through the agency of the home bindery, and the result should be a saving of time and money.

Grangerising. Extra-illustrating, if vandalism be avoided, is sometimes desirable, especially in the instance of local books, and is work which comes within the scope of the home binding department. A neat method of mounting an illustration, and one which allows of both sides of the leaf showing, is to take a leaf of paper as similar as possible to that of the book which is to receive the illustration, and from the centre of it cut a piece of a size a little smaller than the leaf which it is proposed to insert. This will leave a frame of paper on the inner edges of which the outer edges of the insertion may be pasted. Where many plates are dealt with it will be necessary to reduce the thickness of the overlapping portions by paring or sand-papering the edges.

RECTO:

DATE	VOLUMES					MAPS OR ILLUSTRATIONS MOUNTED	MAGAZINE CASES MADE	OTHER ITEMS
	Repaired	Recased only	Resewn	Rebound	Class Lettered			

VERSO:

DATE	MATERIALS AND TOOLS OR TIME WORKED BY BOOK-REPAIRER	VENDOR OR REPAIRER'S NAME	PRICE OR WAGE

FIG. 33. Home Binding Register (Section 104).

Records. For statistical purposes a register should be kept showing the number of books repaired or rebound, with other particulars. A suggested ruling is shown in Fig. 33.

This form of register shows, on the one hand, particulars of the work done daily, and, on the other, the money expended from time to time. A record of this kind is exceedingly useful, enabling one to see at a glance the profit, or otherwise, of the department.

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CHAPTER X

BOOK-REPAIRING

By Henry T. Coutts

106. Foremost among the problems confronting the present-day librarian is the question of how to prolong the lives of books in order that a very limited book-fund may not be unduly crippled by a lavish expenditure on rebinding or replacements. The solution of this problem chiefly lies in the judicious repairing of books. As in the case of human beings, so also in the instance of books; a skilful and timely treatment will often prolong life, while an injudicious remedy will have a contrary and perhaps fatal effect. Repairing done by an unqualified person generally renders the cure worse than the disease. Few things are calculated to put a book more quickly out of circulation than an inexperienced book-repairer with a plentiful supply of paste; and yet in a large number of libraries the repairing of books is entrusted to junior assistants, whose principal qualification for the work is their ability to distribute large quantities of paste.

In moderate and large-sized libraries there should be a department or room set apart for the repairing of books, as indicated in the preceding chapter, and its provision, while ensuring the efficiency of small or minor repairs, will enable the more advanced repairs to be done on the library premises. Obviously the small library cannot afford to employ a binder or skilled book-repairer, and the staff can only undertake minor repairs; but it is absolutely essential that the staffs of such libraries should thoroughly understand elementary book-repairing, for the actual work, and not the superintendence only, devolves upon them. Where there are no facilities for effective repairing, it is advisable to mend books sparingly and to have them rebound early.

107. Books before being repaired should be subjected to a careful examination, and divided as follows:

1. *Books that cannot be repaired:* (*a*) Books, the temporary repairing of which would do more harm than good; (*b*) Those not worth repairing.
2. *Minor repairs:* (*a*) Loose leaves and plates; (*b*) Cut and torn leaves; (*c*) Torn covers.
3. *Stains and blemishes.*
4. *Major repairs:* (*a*) Recasing; (*b*) Resewing and recasing; (*c*) Rebinding; (*d*) Renovation of old books.

An examination of this nature can only be properly made by a person who is conversant with books; who knows something of the popularity, or otherwise, of the books in hand, and the wear and tear to which they are likely to be subjected; who understands the theory and practice of bookbinding; and who has some knowledge of the various kinds of paper, their wearing qualities, and the effect of paste or glue upon them.

Books not worth repairing are ultimately classed as "withdrawals," but, as a rule, they first pass through the repairer's hands. Time and materials should not be wasted on the repair of ordinary library books which are much out-of-date, very dirty, incomplete, or have a large number of sheets torn at the folds. Such books should be placed aside, and discarded at the discretion of the librarian.

The following directions treat of book-repairs generally, and are arranged alphabetically, for the sake of convenience. It should be noted that the prescriptions here given, especially the more elaborate ones, are not meant to apply indiscriminately. It would be manifestly absurd to spend much time and money on an elaborate treatment of repair for an ordinary library book which could be replaced by a new copy at a small cost. On the other hand, if a book cannot be easily replaced, or possesses some particular individual value, the time, money, and skill expended on its repair need not be grudged. Each book should be dealt with on its own merits, and a common-sense treatment applied accordingly.

108. Backs Broken. Treat these as instructed under "Recasing." In some instances rebinding will be necessary. The back of a cloth-cased book should not be glued directly on to the cover to form a "tight" back, unless a satisfactory flexible glue be employed for the purpose, as this stiffens the back, makes it difficult to open the book, and spoils its shape.

In several libraries experiments are being made with flexible glue, and the following quotation, from the annual report of the Cincinnati (U.S.A.) Public Library, is of interest in this respect. "Since the introduction of flexible glue, by means of which, with suitable manipulation, it is possible to replace the covers on books which otherwise would have to go to the binder, the time of one member of the repair department was found sufficient to make these repairs throughout the whole library system. She goes from the main library around through the Branches glueing on covers. The books are quickly back on the shelves in a strong and flexible condition as though they had been rebound. This use of flexible glue is resulting in a saving on the binding bills of thirty or forty per cent." It would, therefore, seem advisable for librarians to make their own tests on similar lines with books that are not worth rebinding.

109. Book-worms. Books should be dusted systematically and often to preserve them from the ravages of book-worms and other insects. Book-worms are seldom found in modern books; doubtless the glue and paste and the wooden boards of old books were more attractive in this respect, while the tarred rope from which modern millboards are made is evidently unpalatable to the book-worm. Bookcases made of soft wood are more liable to attract worms than those of hard wood.

The following recipes have been found effective in preventing and destroying worms in books and wood:

(*a*) Enclose the books affected in a bookcase or cupboard with a saucer of benzine. Benzine will also destroy worms in wood. A vessel containing the benzine should be placed in a room with the worm-eaten furniture, and the room kept closed for a certain time.

(*b*) Take equal parts of powdered camphor and finely chopped tobacco; to this add a little fine pepper or Keating's Insect Powder; sprinkle the mixture over the shelves every few months.

(*c*) Pieces of camphor or naphthalene placed on the book-shelves will keep book-worms away.

(*d*) Alum mixed with the paste is said to be a prevention.

For the filling-in of worm-holes in leaves, see "Perforations."

Casing. See "Recasing."

110. Cloth Renovation. Repair cloth-cased books as

instructed under "Covers Torn" and "Recasing." It is only in very exceptional instances that it is desirable to renovate cloth covers that have become faded or spotted. This may be done, however, by taking a sponge and going over the cloth with a glaire wash, composed of half glaire and half water. The book should then be allowed to dry, and afterwards rubbed lightly with a piece of pure india rubber. A mixture of vinegar and water (half of each) may also be used, but the cloth must be rubbed very gently and carefully or the colour will run. Cloths of a fast colour may be rubbed simply with a damp cloth or sponge.

111. Corners Broken. The covering material at the corners of the boards is apt to wear before the rest of the book. Broken corner pieces should be taken away, and replaced by the repairer with new pieces of material. Vellum is the strongest and most durable material for corners, and should invariably be used for the large and heavy type of book in much demand; notwithstanding the rest of the cover may be of a different material.

112. Covers Torn. If the binding of a book is sound, and the cover very dilapidated, the book should be entirely recovered; if the outer covering, though broken, is in a fair condition, it should again be attached to the boards. Should a part of the covering be missing, raise the edges encircling the damage, and fix a piece of similar material underneath; then rub the edges down, having previously glued them. Half-bound books, the sides of which are worn or soiled, often need re-siding merely.

As a general rule, a thick paste should be used for attaching leather – with the addition of a little glue for very thick leather – and glue for fastening cloth. Mr Zaehnsdorf recommends that roan, and all leather with an artificial grain, be glued, and turned-in with paste.

113. Covers Warped. Book-covers that have warped outwards may be restored to shape by pasting additional lining papers to the insides of the boards, and subjecting to pressure. The mere act of pressing will in varying degrees straighten warped covers, but pressure alone is seldom altogether successful.

114. Creases in Paper. Lay the damaged leaf on a smooth sheet of white unsized paper, over it place a similar sheet

slightly damped, and rub a moderately warm flat-iron over the surface. Repeat the operation until all creases have been removed.

Dog Ears. The " ears " or corners should be treated as instructed under " Leaves Turned Down."

115. Embossed Marks, Removal of. Pressure will make these marks less obvious, but there is no perfectly satisfactory method of removing them.

116. Joints, Loose. These may be strengthened by a strip of jaconet, which should be pasted down along the inside of the joint and attached to the cover and fly-leaf. A better method is to detach the cover from the book, to strengthen the back and joints by glueing a piece of linen or mull over the inside of the back, extending at least half an inch on to the inner sides of the boards, and to re-case.

117. Leather Bindings. When leather is handled frequently, the small amount of natural grease which it receives from the hand is sufficient to preserve it. Leather bindings which are seldom handled, and those which show a tendency to decay, should be treated at least once a year with some preservative. Some well-known preservatives are cocoa-nut oil, vaseline, lanoline and olive oil. Clean paste, well rubbed in, will sometimes arrest the decay of leather. A coating of varnish will, to some extent, protect leather from outside adverse influences, but it hardens it and makes it more liable to crack.

Mr Douglas Cockerell has " found that a solution of paraffin wax in castor oil answers well. It is cheap and very simple to prepare. To prepare it, some castor oil is put into an earthenware jar, and about half its weight of paraffin wax shredded into it. On warming, the wax will melt, and the preparation is ready for use. A little of the preparation is well worked up into a piece of flannel, and the books rubbed with it, special attention being paid to the backs and joints. They may be further rubbed with the hand, and finally gone over with a clean, soft cloth. Very little of the preparation need be used on each book."

To polish old leather bindings, first clean with a dry flannel; rub paste well into the crevices; then beat up the yolk of an egg, and apply with a sponge. A hot iron rubbed over it will give a polished surface. The lustre of morocco leather may be restored by varnishing with white of egg. Brown boot

polish has been recommended as a restorative, but as it generally contains a quantity of turpentine, which is injurious to leather, its use is prohibitive.

LEAVES CUT. *See* "Leaves Torn."

118. LEAVES LOOSE. To insert a leaf, first smooth out the edges, and make a partial fold about an eighth to a quarter of an inch from the inner edge—the fold is generally already there if the leaf has been in the book—then put a thin line of paste on the *outer side only* of the little flap thus made. Perhaps a safer way is to make a margin by placing a thin plate of glass or zinc, or a piece of card or paper, over the rest of the page, leaving the strip which is to receive the paste uncovered. Care must be taken not to use too much paste, or, when the book is closed, it will spread beyond the border of the flap, and make it difficult to read the words printed near the inner margin of the page.

Insert the leaf close to the back of the book with the aid of a bone paper-knife or folder; then close the book, and keep it out of circulation for a few hours to allow the leaf to become well set. Should the back edge of the leaf be worn or torn, a narrow strip of paper should be affixed to correct the irregularity before the leaf is inserted. Before putting the book into circulation make sure that no other leaves are loose; the companion one in the same section must necessarily be so, unless the book be overcast.

A loose leaf carelessly replaced tends to pull out the leaf to which it is fastened; and there is the same tendency, even though the work be properly done, if the inserted leaf is of a heavier texture than the rest of the book. This is especially noticeable in the case of full-page illustrations printed on a clay-laden paper much heavier than that used for the text.

119. LEAVES MISSING. If possible, obtain by purchase the missing section from the publisher of the book in question. If the missing leaf (or leaves) cannot be replaced in this way, and the book is a valuable one, get another copy of the work, and neatly transcribe the missing text on a sheet of paper as similar as possible to that of the book; or photograph or heliotype the leaf from the perfect copy. Books discarded, but not thrown away, sometimes come in useful for making up deficiencies.

See also " Leaves Torn " (*d*).

120. Leaves, Removal of. Should it be necessary to remove a single leaf from a book, follow the advice given in Zaehnsdorf's *Art of Bookbinding:* " do *not cut* this out as is usually done, but wet a piece of fine string, which lay on the leaf as far in the back as possible; close the book and allow to remain a few minutes; the leaf may then be readily drawn out, the moisture of the string having made the paper soft where it was placed."

121. Leaves Torn. (*a*) With a match or pointed spill of wood, apply paste to the edges of the parts torn; then neatly join the parts, taking care that the print is brought into alignment, and place pieces of tissue paper on each side of the leaf along the joint. Put protecting paper over the tissue, close the book, and subject to slight pressure until the adhesive is quite dry. When dry remove the loose tissue paper, and the torn edges will be found to be neatly joined together; the fragments of tissue paper that adhere to the joint should be allowed to remain, as this strengthens the repair. Should the tear extend right across the leaf, the ends of the parts torn may be strengthened by pasting small pieces of thin paper of a similar tone across the margins.

(*b*) If the damage is a cut and there are no overlapping edges, take a piece of onion skin, or thin Japanese or other transparent tissue paper, and paste down right along the tear, having previously brought the severed parts together. Rub down with a piece of blotting paper. The repair may be strengthened by repeating the operation on the reverse side of the leaf, or by pasting a piece of paper at the margin of the page as in the foregoing instance. This, however, makes the repair more clumsy, and, as a rule, is unnecessary.

(*c*) Cut and paste pieces of pared paper across the tear or cut, between the lines of print. This method must be carried out very neatly, and requires skill.

(*d*) In the event of a part of a leaf being missing, a piece of paper similar to the original should be joined to the edge of the tear. The manner of so doing is described by Mr Douglas Cockerell in his useful work, *Bookbinding and the Care of Books.* " Supposing a corner to be missing, and a piece of paper to have been found that matches it, the torn page is laid over the new paper in such a way that the wire marks on both papers correspond. Then the point of a folder should be drawn along

the edge of the torn sheet, leaving an indented line on the new paper. The new paper should then be cut off about an eighth of an inch beyond the indented line, and the edge carefully pared up to the line. The edge of the old paper must be similarly pared, so that the two edges when laid together will not exceed the thickness of the rest of the page. It is well to leave a little greater overlap at the edges of the page. Both cut edges must then be well pasted with white paste and rubbed down between blotting-paper. To ensure a perfectly clean joint the pasted edge should not be touched with the hand, and pasting-paper, brushes and paste must be perfectly clean."

122. LEAVES TURNED DOWN. To repair leaves which have been folded, dip a sponge in water in which a small quantity of gum tragacanth has been infused, and moisten the parts of the leaves affected. Then place the damaged leaf between pieces of blotting-paper, and rub a hot iron over it. The gum tragacanth serves as a stiffener, and is generally effective; but if the leaf is broken it may be necessary to treat it as torn.

123. MARGINS BROKEN. If a new margin is required, take a piece of paper as similar as possible to the damaged leaf, cut to the desired size, and join as directed under "Leaves Torn." Should it be necessary to make new margins right round the leaf, carefully trim what is left of the old margins. Then take a leaf of paper similar to the original leaf, and from the centre of it cut a piece of a size a little smaller than the leaf it is purposed to insert, and thus form a frame of paper, on the inner edges of which the outer edges of the old leaf can be pasted.

124. OLD BINDINGS. Books possessing valuable old or characteristic bindings should be skilfully repaired, and not rebound. In certain cases it will be necessary to insert new material under the old, but the original covering should be preserved as far as possible. Decay in books may sometimes be traced to external injurious influences, such as damp, heat, gas fumes, etc. Where this is so, the books should at once be removed to more favourable surroundings. Old books should be regularly overhauled, and preservatives applied.

See also "Leather Bindings."

125. PERFORATIONS. The simplest way of filling in holes which have been made by a perforating stamp, or through the ravages of book-worms, is to split or thin out a piece of

paper similar to that of the damaged leaf, and paste this over the perforation marks. A neater, but more tedious way is to take paper of the same quality, and reduce it to a paste by boiling it in size until it is of a pulpy consistency. Then place a sheet of tin or a porcelain tile under the damaged leaf, and spread the paste, which is really soft paper, over the holes. When dry, the paper paste will form part of the leaf.

REBACKING. *See* "Recasing."

REBINDING. The process of binding is outlined in Chapter I.

126. RECASING. Books, especially the "cased" variety, will often break away at the hinges, while the covers and the sewing remain in good condition. If a book is only partially broken at the hinges, complete the separation by opening the boards back until they touch each other; then carefully cut through the lining at the hinges, taking care, should there be tapes or cords, to preserve them intact. Afterwards remove the tape from the boards.

Now proceed to recase, thus: Strip and reglue the back, taking care not to interfere with the sewing, and remove the remaining portion of the end-papers. The glue, which should be flexible, must be evenly applied while it is quite hot, and immediately afterwards a piece of mull, cut to the requisite size, should be fixed to the back of the book, leaving an overlap on each side of at least three-quarters of an inch. When dry a strip of brown paper of good quality, cut to the size of the back of the book should be glued over the mull. Afterwards glue the laps of the mull and tapes or cords (if any) to the boards, and line with new end-papers. The case may be strengthened by glueing a very thin board over the tapes and mull before pasting down the end-papers; thus forming a substitute for a split board.

In instances where the sewing is broken, the books will require to be resewn before they can be recased. Separate such books as before described, cutting right down the hinges. Then cut the threads and carefully pull the book to pieces section by section until the whole book has been taken down. Remove all trace of the original thread and glue. Hammer out the old joint by beating along the back edge with a backing hammer. To obviate bruising the sections, bring down the hammer perfectly flat, and allow it to rest for a second before

raising it for the next blow. Collate the book to see that no part is missing, and mend where necessary. The book is now ready for resewing.

RESEWING. See the process of hand-sewing described in Chapter I.

127. SECTIONS LOOSE. When the sections or sheets become loose, the book should be resewn; tipping in is worse than useless. Single sections may be sewn into loose back books, thus: Open the book at the middle of the loose section, and pass the needle and thread through the original hole made by the binder near the top, taking care to leave a short length of thread in the section for subsequent tying. Drop the needle and thread between the back of the book and cover, and pass to the inside of the section through the hole near the bottom; then carry the needle and thread around again in the same way and tie at the point of commencement.

Loose sections in tight-back books can be sewn independently, or on to a three-quarter inch guard of paper or jaconet, and pasted into the book. In the latter case the guard would be pasted to the outer leaves of the adjoining sections.

128. SIZING. Leaves that have been washed may be strengthened by resizing. The size may be prepared from the recipe given in the following chapter. The leaves to be sized should be dipped separately into the hot size for a second or two only, taken out, and put between blotting paper to rid them of the superfluous size. If a large number of leaves is dealt with at one time, they can be laid in a pile until all have been sized, and then placed between pressing boards, and wrung in the "lying press." The sheets or leaves should afterwards be spread out or hung up to dry.

All pencil and dust marks should be removed from the leaves before being sized; otherwise the size will fix them, and render them difficult of removal. Many stains, including the deep brown water-stain, will disappear after submersion in the hot size.

STAINS AND BLEMISHES

129. *Blood.* Thoroughly soak the stained leaves in cold water; then apply a thick lather of soap to the parts affected; afterwards rinse well with cold water, dry, and size. Hot water must on no account be used, as heat renders the albumen of the blood insoluble.

130. *Damp.* (*a*) To prevent the spread of damp, place quick-lime in saucers near the books affected. The lime should be renewed every few days.

(*b*) Plunge the stained leaves into a solution of hot water and alum, and let them remain for a few hours as in the case of water stains.

(*c*) Immerse the damaged leaves in a solution of pure hydrochloric acid, hydrogen peroxide, or Javelle water; about half an ounce of the acid to a pint of water. Should these remedies be ineffectual, plunge the sheets one by one into a weak bath of chlorine water, and allow them to remain in it for an hour or two; then replace them in the hydrochloric bath. After about half-an-hour, rinse, dry, and size.

Dirt. See "Dust," "Mud," etc.

131. *Dust.* Dust marks can generally be removed by rubbing stale bread crumbs over the leaf in a rotary motion. This is a safe and usually effective method, but should the dirt not give way to this treatment, a piece of soft india-rubber, or (in obstinate cases) very fine glass-paper may be used. The rubber and glass-paper must be used in one direction only, and care must be taken lest the leaf be damaged in the process. Before closing the book, see that the crumbs or minute pieces of india-rubber are carefully brushed away from the back.

A piece of silk cloth drawn across a page will attract to itself particles of dust.

132. *Faded Leaves.* These may be restored to their original colour by washing them in water containing a small quantity of hyposulphite of soda, and afterwards dipping them in Javelle water for a few minutes. Rinse, dry, and size.

Fat. See "Grease."

133. *Finger-Marks.* These may sometimes be removed by a piece of soft india-rubber, but often, on account of their greasy nature, it is difficult to erase them. In obstinate cases, spread a jelly of white or curd soap over the marks, and leave it for an hour or more. Then carefully wash off the soap, and dip the leaf in cold water containing a small quantity of carbonate of soda. Rinse, dry, and size.

Fox-Marks. See "Damp," recipe (*c*).

134. *Grease and Fat.* (*a*) Place a piece of blotting paper on each side of the affected leaf, and rub a warm flat-iron over the paper. The grease, being melted by the heat of the iron,

will be absorbed by the blotting paper. Change the paper and repeat the operation if necessary. Many fat stains, including the common candle-grease, will give way to this simple treatment.

(*b*) Brush a little white soap over the grease spot, let it remain for about half-an-hour, and then wash it off.

(*c*) Cover the grease or oil stains with ether or benzine, and employ the blotting paper and iron in the manner before mentioned. Benzine and ether are excellent solvents, but care must be exercised in their use on account of their highly inflammable properties. Alcohol by itself, or with a small quantity of ether, is also useful for removing grease spots.

See also recipes at "Oil."

135. *Ink.* (*a*) Ink may be erased by a strong solution of oxalic, citric, or acetic acid, followed by a weak solution of hydrogen peroxide. The latter solution may be prepared by mixing equal volumes of hydrogen peroxide (10 volume strength, sold at 8d. per lb.) and water. Afterwards plunge the leaf in warm water to wash away the acid. It is sometimes more effective to follow the bath of oxalic acid by applying a solution of one part hydrochloric acid to six parts water, after which wash in cold water, dry slowly, and size.

(*b*) Place a piece of blotting paper or fine muslin underneath the mark to be removed. Dip a sponge in lemon-juice, and dab it gently on the stain so as to moisten it. Now take a clean, white, soft rag, and fold it into a pad, and press this on the stain so as to absorb a little of the ink. Take care not to rub the mark. Repeat the operation until all trace of the ink has been removed, using a clean part of the pad each time.

Ink, Marking. If the basis of the ink is nitrate of silver, apply a solution of tincture of iodine; this changes the basis into iodide of silver, which may be removed by a solution of hyposulphite of sodium. The paper should be well rinsed after the application of hyposulphite, and then dried and sized.

136. *Jam.* Dissolve a small piece of soap and a little carbonate of soda in warm water, and apply to the stains with a soft brush or sponge. Rinse in clear water.

137. *Lead Pencil.* Use the ordinary india-rubber or bread-crumbs, taking care not to wet the marks. Should the impress of the pencil remain, carefully rub a clean smooth instrument,

such as a bone folder or the smooth end of a pocket knife, over the mark.

Marking Ink. See "Ink, Marking."

138. *Mildew.* This may be prevented by the application of birch, cedar, or other essential oil. Bindings may be preserved from mildew by brushing them over with spirits of wine. Mildew is very difficult to cure, but it can be arrested by attention to dryness.

See also "Damp."

139 *Mineral Stains.* These may generally be removed by the application of a solution of oxalic acid, followed by a solution of hydrogen peroxide of the same strength as that recommended in section 135. Wash, dry, and size.

140. *Mud.* (*a*) Lay the leaf on a slab of glass, and, with a soft brush, apply a soapy solution to the stains. Rinse well, dry, and size.

(*b*) Wash the stained leaf in cold water, then in a weak solution of hydrochloric acid, and afterwards in a solution of hydrogen peroxide of the same strength as that recommended in section 135. Rinse, dry, and size.

141. *Oil.* (*a*) Dissolve in water, 3 oz. soap, 1½ oz. clay, and ½ oz. quick lime; apply the solution to the stain, and let it remain for about a quarter of an hour. Then dip the leaf in a bath of warm water. Dry slowly, press, and size.

(*b*) A solution of one part nitric acid to ten parts water is useful in certain cases for removing oil stains. After treatment, plunge the leaf or leaves in water, changing the water several times. Dry and size.

(*c*) Pour ether in a circle round the spot, gradually narrowing the circle until the stain is covered. Place pieces of blotting paper on either side of the leaf, and apply a warm iron.

142. *Paste.* Fresh marks of paste may be removed with a moist sponge; older ones by the application of a little warm water and soap.

Pencil Marks. See "Lead Pencil."

143. *Tea.* Apply a lather of soap to the stain with a soft brush. Thoroughly rinse, dry, and size.

144. *Vegetable Stains.* Mix equal volumes of hydrogen peroxide (10 volume strength) and water, and soak the damaged leaves in this solution until the stains disappear. Brushing the stains with a soft brush will facilitate the operation. Then

place the leaves in cold water for five or six hours. Dry and size. If the stains are due to the green colouring matter of leaves, chlorophyll, they may be removed by brushing with methylated spirit; the spirit being soaked up with blotting paper. Repeat until the stains are entirely removed.

145. *Water.* Water-stains may be recognized by a sharp-edged mark which they leave on the paper. To remove these stains, plunge the damaged leaves in hot water in which a small quantity of powdered alum has been dissolved, and let them remain in it for an hour or two. Then rinse the leaves in warm water, dry, and size.

146. VELLUM, MENDING. Vellum may be mended in the same way as paper, except that the edges should be roughed before pasting; otherwise they will not adhere. A cut in vellum should be mended with a lacing stitch of fine silk, and a patch should be treated in a similar way by putting a stitch of silk at each end to assist the adhesive properties of the paste. Paste alone is seldom altogether successful in fastening vellum.

Milk is useful for cleaning vellum, and generally has the effect of making it more pliable. Benzine will take stains out of vellum without destroying the texture. Vellum may also be cleaned by being gently brushed over with warm water and soap, containing a little glycerine—a teaspoonful to half a pint of water. After washing, it may be bleached by the application of a solution of hydrogen peroxide.

WORMS in books and wood. *See* "Book-worms."

For list of authorities *see* Section 171.

CHAPTER XI.

GENERAL INFORMATION AND MISCELLANEOUS RECIPES

By Henry T. Coutts

147. Black, Bookbinders'. Brunswick black, thinned down with turpentine to the desired tint, with the addition of a few drops of bookbinders' varnish, is useful in renovating old black calf bindings. The varnish added should be in the proportion of one teaspoonful to twenty of the thinned "black."

148. Blocking Powder. A fine powder which may be sprinkled on the book, preparatory to lettering, as a substitute for glaire. Its principal use, as its name suggests, is for blocking, but satisfactory results can be obtained by its use in the work of lettering by hand. Its advantages are that it is cleanly, and leaves no mark.

149. Book-Plates. Do not destroy old book-plates found in books. If necessary, remove them to the end board.

150. Cement for leather and cloth. Take 1 lb. gutta-percha, 4 oz. india-rubber, 2 oz. pitch, 1 oz. shellac, and 2 oz. oil; melt together and use hot.

151. Collating. Books before being rebound should be examined in order to ascertain that no leaves are missing, and that the sheets or sections run in proper sequence. This may be done leaf by leaf, or section by section, according to the letter or signature printed at the bottom of the first page of each section. The text of the book invariably commences with the signature B, the title page and preliminary matter being reckoned A. The letters J, V, and W are generally ignored. Should the size of the book necessitate a repetition of the alphabet it is usual to repeat, thus: AA, BB; Aa, Bb; or 2A, 2B. Numbers are sometimes used instead of letters.

When collating by page number, take the first fifty or sixty pages, at the right-hand bottom corner, between the thumb and first finger of the right hand; then, with a twist of the

hand, fan out the pages so that they may be readily turned over by the thumb and first finger of the left hand. Repeat the operation until the whole pagination has been examined.

Collating by signatures is done in a similar way, except that instead of examining each leaf, every ninth, fifth, or third leaf, as the case may be, is checked by the signature printed at the bottom. If these signatures do not appear in proper order at regular intervals, some part of the sections is missing. Plates or maps that are not paged should be compared with the list appearing in the front of the book.

152. CUTTING. To cut the leaves of a book, use an ivory or bone paper-knife about 8 inches in length, having an even edge, and neither too sharp nor too thick. A short knife is disadvantageous, and an ordinary pocket or steel knife is emphatically prohibitive. The quality and texture of the paper will affect the cutting, but generally speaking, the leaves should be cut by an even or drawn movement, and not by an erratic or pushing one which tends to "saw" the edges. Care should be taken when cutting the top edges to cut well into the back, *i.e.* to cut the leaves right through to the back fold.

Cutting or guillotining the edges in the process of bookbinding, is described in Section 12.

153. DUSTING. Before opening a book see that all dust is removed from the top edge; otherwise there is the danger of the dirt penetrating into the leaves. Books should be dusted systematically and often. There are several patent dusting machines on the market, but where none of these is employed, the following method might be adopted. Take a box of wet sawdust; over this hold the volume to be dusted, gripping it tightly to prevent the dust from penetrating inside, and brush with a fairly hard brush, so that the dust may fall into the wet sawdust and be absorbed thereby. The object of the sawdust is to lay the dust and so prevent its distribution from one book to another, and for a similar reason the shelves should be cleaned with a damp cloth before the books are replaced.

When replacing books, do not pack them too tightly together on the shelves, but just close enough to prevent the dust from getting inside.

154. GLAIRE. Glaire can be purchased, already prepared, from dealers in bookbinding materials. It may, if preferred, be made according to the following recipe. Add a dessert-

spoonful of pure vinegar to the white of an egg, and beat up to a froth with an egg-whisk. Take care not to include any of the yolk. A drop of ammonia, a small piece of camphor, or a little common salt may be added to preserve it. When beaten, let it stand for some hours; then pour the clear liquid into a bottle, and it is ready for use. Glaire should be made as required; if kept for long it decomposes and becomes very objectionable. Binders used to think that by keeping glaire until it became putrid, it increased in strength, but this idea is now considered fallacious.

See also "Blocking Powder."

155. GLUE. In making, first break the glue into small pieces and soak in water for several hours. This will render it soft and swollen. Then put it in the glue-pot and simmer until quite fluid. It is advisable to prepare glue in small quantities, as each time it is re-heated it loses a proportion of its strength. A small quantity of salicylic acid, well stirred in, will prevent glue from turning sour. For a description of glue, *see* Section 65.

156. GLUE, LIQUID. Melt one pound of good ordinary glue in a pint of water, and drop in gradually a small quantity of nitric acid. Allow to cool, put in bottles, and use as required.

GRANGERISING. *See* Section 104.

157. GUM OR ELASTIC MUCILAGE. To twenty parts of alcohol add one part of salicylic acid, three parts of soft soap, and three parts of glycerine. Shake well together in a wide-mouthed bottle, and add a mucilage composed of ninety-three parts of gum arabic and one hundred and eighty parts of water. Gum should not be used for book-repairing.

GUMMED LABELS. *See* "Labels, Gummed."

158. LABELLING. The matter of book-labelling is of an elementary and obvious nature, yet the following hints may prove serviceable. It is customary for reference and lending library books to be labelled on the inside of their front boards with a bookplate or board-label. The whole surface of the back of these labels should be pasted, and they should be well rubbed down to the board. Lending library books generally have, in addition, a label ruled in columns to show dates of issue or return. This date-label should be attached to the front fly-leaf of the book by a narrow line of paste at the inner

edge only, so that when full it can be easily removed. When many books are dealt with at a time, a dozen or more date-labels may be fanned out and pasted, thus:

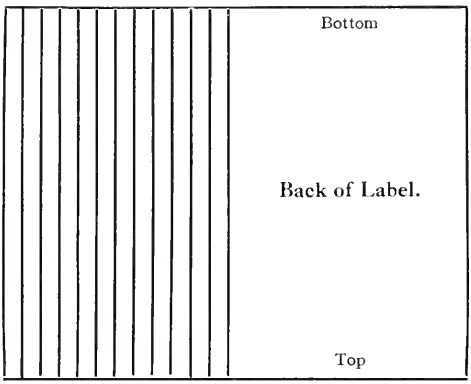

FIG. 34

Where the card-charging system is in operation, and the bookcard is placed in the book while the latter is in the library, it is necessary to paste a pocket, or a slip forming a pocket, on to the inside of the front (or back) board of the book. The difference in the styles of the pockets will to some extent affect their fixing; but to those who are contemplating the introduction of such pockets, the following method, which is employed at the Islington Public Libraries, is recommended for quickness and accuracy. A manilla slip, which, when fixed, forms a pocket, is placed at the top right-hand corner of the inside of the front board. Its position is determined by means of a zinc stencil with a portion cut out to correspond with that part of the slip which is to be pasted. The stencil is placed at right angles to the top and inner edge of the board, and paste brushed into the opening, thus leaving a rectangular line of

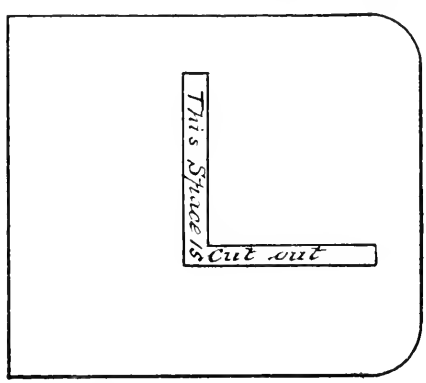

FIG. 35. Stencil.

paste over which the slip is accurately placed, as shown in Fig. 35.

See also " Tagging."

159. LABELS, GUMMED. Soak in cold water for about twenty-four hours, an ounce and a half of ordinary glue; dissolve this with two ounces of candy sugar and three-quarters of an ounce of gum arabic in six ounces of hot water, stirring constantly until thoroughly mixed. This paste, if applied to labels and allowed to dry, will be ready for use at any time by simply moistening with a wet finger or brush.

160. LABELS, REMOVAL OF. Book plates or labels can generally be removed by placing a piece of damp blotting paper over the label, and allowing it to remain for about an hour. On taking the blotting paper away, there should be little difficulty in peeling off the label. If any difficulty is experienced, the common process of allowing a jet of steam to play upon the bookplate should be adopted.

161. MAGAZINE READING CASES. These may be made in the home bindery (see page 122) or purchased from the library bookbinder. Most of the bookbinders who specialize in library work stock a quantity of cases in several sizes, to fit the various periodicals. Generally speaking, the bookbinders' magazine case is very strongly made, and, paradoxical as the statement may seem, this is oftentimes a fault. Many of these cases are, or ought to be, discarded owing to their filthy state, while they are sound in other respects; a less expensive case and more frequent renewal is recommended.

Temporary bindings for magazines are described at " Pamphlets " (Section 164).

162. OPENING OF BOOKS. To open a new or rebound book, lay it on its back, and, using both hands, take a *few* leaves simultaneously at the beginning and end, press them down, and work in this manner until the centre of the book is reached.

163. OWNERSHIP MARKING. The covers of library books are sometimes stamped in gold or in blind as a mark of ownership. The former is generally done on the backs of books in the process of rebinding. Stamping in blind on the sides of books is invariably done on the library premises, and may be preferred for this and the following reasons: 1, All the books in the library, whether in library binding or publishers' cases, can be stamped promptly; 2, The stamp in blind is less obvious

and more permanent than in gold, the impression on the board being deeper and practically ineffaceable; 3, The only cost is the price of the machine, about £6, and the time of the operator, an ordinary member of the staff.

164. PAMPHLETS, TREATMENT OF. The term "pamphlet" is an arbitrary one, generally signifying a small book, unbound, with or without paper covers; in Collins' *Author and Printer* a pamphlet is more exactly defined as "any work not exceeding five sheets, stitched or sewed, usually in paper covers." Directly a pamphlet is bound in boards it ceases to be a pamphlet and becomes a book. The same rules, therefore, which govern the binding of books should apply in the binding of pamphlets. As pamphlets are of a slight nature, and as many of them are not much handled, thin boards covered with cloth or linen are all that is usually required.

Pamphlets naturally fall into three main classes: 1, Those which are worthy of binding, and which it is possible to transfer immediately to the volume stock; 2, Those which must be temporarily filed until such time as they may be bound or discarded; 3, Those which are not worth binding, or which, for financial reasons, cannot be bound, but which it is desirable should be filed permanently in pamphlet form.

Class 2 is mainly composed of the serial or periodical type of pamphlet, which may be dealt with according to the usual methods of filing in pigeon-holes or pamphlet boxes; the object being to keep those that are to be bound in good preservation, and in the interim to store them so that reference to them may be readily made. Newspapers and similar publications, however, present certain difficulties for which there is need of special provision. The looseness and multiplicity of the sheets make a temporary binding desirable, and the sheets when laid flat often take up more room than can be conveniently set apart for the purpose. A temporary binding which overcomes these difficulties, and which has the advantage of simplicity, is as follows: A lath, similar to that used in the bottom of a blind, is cut to a size a little longer than that of the paper. A piece of bookbinders' cloth, or other textile fabric, is cut to the size of the lath one way, and nine or ten inches beyond the width of the paper, the other. The cloth is then tacked to the lath, in which two or three holes are drilled at regular intervals. Corresponding holes are pierced in the back margins of the

papers, a loose twin lath placed on top, and a lace or tape passed through each hole and tied at the back (*see* Fig. 36). The papers are then rolled from back to front so that the cloth forms a covering, tied with tape, and filed in cylindrical form, a tag on which the title is written being affixed.

A simple and effective method of preserving pamphlets, single numbers of magazines intended for circulation, and even thick Government publications, which has been found highly satisfactory in the Washington Public Library (D.C., U.S.A.) is described by the Librarian, Mr George F. Bowerman, in the *Library Journal*, vol. xxxv, 1910, pp. 258-9. The original paper cover is carefully detached from the magazine; a manilla wrapper is attached to the magazine by two or three long pamphlet stitches — described in the next paragraph, unless the magazine is fairly thick or heavy, in which case the cover is also glued to the back with flexible glue; and the original wrapper is pasted over the manilla cover, thereby hiding the stitches on the back and preserving the individuality of the magazine. Manilla paper is very satisfactory for such work as its flexibility permits of constant folding without breaking, and its surface is very suitable for writing call numbers, titles, etc.

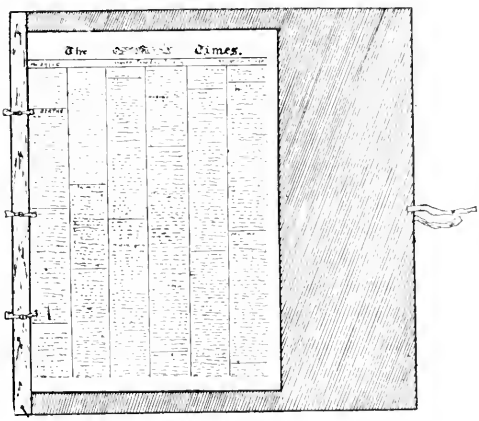

FIG. 36

Miscellaneous pamphlets in class 3 may be simply and conveniently filed in classified order in pamphlet cases or boxes, which may be obtained in various sizes from Messrs Libraco, Ltd., and similar firms. Pamphlets without outside wrappers should be supplied with manilla covers, on the front of which

the title, etc., should be plainly written. Many of these pamphlets consist of a single signature or section, and may be fastened to their covers with the pamphlet stitch here described. The threaded needle is pushed through the centre of the fold from the inside, and is carried along the back and through a hole at some distance towards the head; it is then taken down the inside of the fold towards the tail, and passed through a hole at about the same distance from the centre as the one near the head, and is carried back through the centre hole; the two ends of the thread are tied over the piece in the middle of the fold.

A very simple binder for single pamphlets consists of two pieces of thin cardboard, or stout manilla, held together by a strip of cloth which forms the back or hinge. Fastened inside are two gummed strips between which the pamphlet is attached. Should the pamphlet be fairly large or bulky, it may be desirable to stitch it to the binder or to fasten it with flexible glue. If the pamphlet possesses a wrapper, it might be detached and pasted on to the outside of the binder.

165. PASTE. Take a quarter of a pound of best white flour and a quarter of an ounce of powdered alum. Mix these ingredients together and add a pint of cold water, stirring the while with a wooden spoon until all lumps have disappeared. Heat gently in an enamelled saucepan, and stir until boiling point is reached; then let it simmer for about a quarter of an hour, stirring occasionally to prevent burning. It should then be allowed to cool, and afterwards beaten up by means of a flat stick. The result will be a thick paste which may be thinned by diluting with warm or cold water until the required consistency is obtained. For very white paste substitute for ordinary flour, starch, rice, or corn flour.

To prevent decomposition, add a few drops of oil of cloves or bergamot, or a small quantity of carbolic or salicylic acid. Paste which has become sour should never be used. For thick leather work a little thin glue should be added to the paste. Much time and trouble will be saved by purchasing what is known as "preserved paste" from the several Paste Companies or Bookbinding Material Dealers.

166. SIZE. Dissolve an ounce of isinglass or gelatine in about a pint and a half of water. Gently warm this, taking care to heat gradually, otherwise the solution will burn and turn brown. If

the solution is not perfectly clear it should be strained through a piece of fine muslin. Pour the size into an enamelled iron dish or pan, and keep in the fluid state by continual re-heating, or, preferably, place it over a small jet of gas or spirit lamp during use.

167. Sizes of Books. The size of a book is determined by the size of the sheet of paper, and the number of times the sheet is folded. A sheet folded once forms a folio of two leaves or four pages, folded twice, a quarto of four leaves or eight pages, folded thrice, an octavo of eight leaves or sixteen pages, and so on. The following are the more usual sizes of printing papers:

	Inches.		Inches.
Pott	15½ by 12½	Medium	24 by 19
Foolscap	17 by 13½	Royal	25 by 20
Crown	20 by 15	Super Royal	27 by 20½
Post	20 by 16	Imperial	30 by 22
Demy	22½ by 17½		

These sheets, when folded, are defined according to the number of folds, thus:

	Abbreviated Form.	Pages to a Sheet.
Folio	Fo	4
Quarto	4to	8
Octavo	8vo	16
Duodecimo	12mo	24
Sextodecimo	16mo	32
Octodecimo	18mo	36
Vigesimo-quarto	24mo	48
Trigesimo-secundo	32mo	64

The common book sizes used in the present day are set out in the Schedule (*see* page 88).

168. Tagging. No method of tagging that has been tried on the backs of books has proved perfectly satisfactory, although many improvements have been made on the ordinary paper label used by our forefathers. The chief difficulty has been to get a tag which will firmly adhere to the back of a book, and the surface of which, necessarily of a light colour as a background for a lettering of black ink, will remain tolerably clean for a number of years.

Dennison's small circular white tag, coated on one side with a thin gum, has been found to be fairly successful in adhering to the majority of book-covers. The lettering on this and similar tags should be neatly written or printed with a permanent black and waterproof ink. It is the practice in some libraries to apply a paper varnish to the tags after they are fixed.

Another tag which has been tried with a fair amount of success is a leatherette tag stamped in gold with various combinations of letters and numbers. For this leatherette tag, fish-glue is generally reckoned the best agglutinant.

In Irish phraseology, the most satisfactory method of tagging is to dispense with the tag altogether. In other words, to have the classification or other mark imprinted, preferably in gold, on the back of the book itself. Wherever possible, provision should be made on the library premises for lettering with gold-leaf (*see* Section 103). Should this be impracticable, the books can either be sent to the binder to be numbered, or the gold-leaf impression substituted by a lettering of white ink, which should be applied with a pen or camel-hair brush, and allowed to dry; after which a thin coating of varnish should be brushed over it. This lettering will last, with ordinary wear, for two or three years.

169. VARNISH. Bookbinders' varnish may be purchased, ready for use, from a bookbinding material dealer; those, however, who prefer to make their own, will find the following recipes useful:

(*a*) Put in a vessel three pints of spirits of wine of forty per cent, eight ounces of sandarach, two ounces of mastic in drops, and eight ounces of shellac. Place the vessel in another filled with cold water, and let it boil, stirring the substances together until well mixed. Then add two ounces of Venice turpentine, and boil for half an hour. Stir until cool, and next day filter the varnish through a piece of fine linen and cork it up in a bottle. Apply lightly and evenly with a piece of cotton-wool.

(*b*) Add oil of thyme, or pure oil of rosemary, to coarsely-powdered gum copal, sufficient to form a solution. Pour off the superfluous liquid, and mix the remainder with sufficient alcohol to dissolve it well. The quantity of thyme or rose-

mary used should just cover the copal, and the proportion of alcohol should be about nine or ten parts to the whole.

Varnish, besides imparting a gloss, acts as a preservative to the leather, but if excessively used it becomes brittle on the surface. Should it be necessary to remove the varnish after it has been applied, it may be done with spirits of wine.

170. VARNISH (PAPER). A white varnish for paper may be made by dissolving one and a half ounces tender copal; one ounce camphor; one quart of alcohol of ninety-five per cent, to which, when dissolved, add two ounces mastic; and one ounce Venice turpentine. When the whole is dissolved it should be strained.

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END OF PART ONE

PART II
HISTORICAL SKETCH
OF
BOOKBINDING

PART II

CHAPTER XII

EARLY HISTORY

By Geo. A. Stephen

172. The origin of bookbinding is to be sought in the confines of antiquity. It is impossible to determine accurately whence the art arose, but the terra-cotta cases of the ancient Assyrians and Babylonians are usually regarded as furnishing the earliest examples of book-covers. These ancient peoples kept their records on baked clay tablets which, after being inscribed with cuneiform characters, were protected from injury by being enclosed in cases bearing a duplicate inscription. Some tablets had three or four cases, one within the other, each of which was similarly inscribed, so that the inner tablet was not imperilled until the several outer cases had been damaged or broken.

173. The next step in the evolution of the book was probably the fastening with rings of the leaden tablets on which hieroglyphics were inscribed, and a further advancement was made with the introduction of the Egyptian roll of papyrus, made by uniting together thin strips of the papyrus reed with some adhesive substance. A length of the material was rolled on a stick, generally referred to as *umbilicus*, to each end of which was attached a projecting knob or button, usually of bone or wood, to which the name *umbilicus* was also apparently extended. Sometimes in place of the knob or button there was a tip, *cornu*, of carved ivory or other ornamental material. The ordinary rolls were protected by a wrapper of papyrus, but the more valuable ones had a wrapper of vellum, stained with a brilliant colour, usually scarlet or purple. Papyrus became the principal writing material of the ancient world, although vellum and parchment were also used for this purpose in Greece and Rome. The roll (Latin *volumen*) remained the most usual form of book for many centuries.

The various forms of early binding naturally assumed a shape similar to that of the materials they had to protect. In Egypt the rolls were preserved in jars holding about nine or ten each; in Rome they were kept in cylindrical chests or boxes of wood, called *scrinia* or *capsæ*, which were often of elaborate workmanship. For the purpose of distinguishing the rolls in these boxes, each roll had attached to it at the top a small vellum label, *index* or *titulus*, also coloured, bearing the title of the work.

174. Waxen tablets were employed at an early date by the Greeks and Romans when it was unnecessary to use the roll, which was more suitable for lengthy works. In appearance these tablets were not unlike a child's small slate; they were wooden slabs hollowed out to a sufficient depth to receive a thin coating of wax, on which the writing was impressed by means of a hard-pointed instrument called a *graphium* or *stilus*. These tablets were hinged together with metal rings or thongs of leather, and two or more of them thus fastened were called a *caudex* or *codex*. A codex consisting of two leaves was called a *diptych*, one of three leaves a *triptych*, and one of more than this number a *polytych*. In shape the *diptych* closely resembles the modern form of book, and indeed may be considered its prototype. In course of time the diptychs were extensively used, and many of them were of elaborately carved ivory. They are usually classified as *consular* or *ecclesiastical* diptychs. It became customary for the Roman consuls, upon their election to office, to send ornate consular diptychs of ivory to important personages as a formal announcement of the event, and they were also issued on other special occasions. This practice was continued until the abolition of the consulship in A.D. 541. The exterior sides of these consular diptychs were frequently sculptured with a full-length effigy of the sender in his official robes and insignia, or with scenes and inscriptions. The early Church preserved many consular diptychs, and they were inscribed with the names of benefactors, bishops, saints and martyrs, and of others who were held in special honour. Probably many of the so-called ecclesiastical diptychs were really consular diptychs which had been adapted by the early Church to its requirements. Sometimes the exteriors of the diptychs were used as covers for books of the Gospels.

175. The exact date at which the roll was superseded by the folded form of book is uncertain. Parchment and vellum came into prominence as writing materials about the second century B.C., but it was not until the fifth century A.D. that manuscripts in the roll form were superseded to any appreciable extent by the folded form of book, the sheets of which were written on both sides.

The primary object of the bindings of the early books was to preserve the written matter which they enfolded, but at an early date it was found that the covers lent themselves to ornamentation. In the East by the middle of the fifth century bookbinding had developed to an art. It is recorded that certain officers of the Byzantine Empire carried in the public processions "large square books" which contained the laws and instructions of the Byzantine Emperors. Those books were bound in attractive covers of green, red, blue, or yellow leather, held fast by leather straps or clasps, and ornamented with thin golden rods arranged horizontally or in patterns of a lozenge shape. In the following century Byzantine art was at its height of perfection, and fine specimens of the Byzantine artists' work were then to be found on bookbindings. The elaborately worked covers, called "Byzantine coatings," were attached to the binding proper; they were principally of metal —gold, silver, or copper-gilt—and were embellished with precious stones and ivory carvings. So luxurious was the ornamentation on some of the early books that St Jerome was forced to exclaim, "Your books are covered with precious stones, and Christ died naked before the gate of His temple."

176. It is not to the East, however, that one must look for the first bookbinder or book-cover decorator known to fame, but to Ireland, for in this country, in the sixth century, the monk Dagæus (d. 587 A.D.) is said to have skilfully made and ornamented bindings with precious metals and jewels. The Irish monks ordinarily bound their manuscripts in limp leather covers or in wooden boards without much ornament. It was customary for the Irish ecclesiastics to place their books in leather cases or satchels known as *polaires*, which were provided with straps so that they could be suspended from pegs in the wall or hung from the shoulder or girdle when conveying them from place to place. The Irish also kept books of special value in *cumdachs* or book-shrines; these

are simply rectangular boxes made of various materials—bronze, brass or wood—and plated with silver or gold which was elaborately ornamented, the *motif* of the principal face generally being a cross. In Scotland and on the Continent these book-shrines existed under the name of *capsa*. There is historical evidence to prove that cumdachs were made for the "Book of Durrow," enshrined A.D. 877 to 914, the "Book of Armagh," enshrined A.D. 938, and the "Book of Kells," enshrined before A.D. 1007, but unfortunately these cumdachs have been lost. The oldest cumdach which has survived to our time is that containing the manuscript known as the Molaise's Gospels, dating from about 1001, which is now preserved in the Museum of the Royal Irish Academy, Dublin. A finer example, also preserved in this museum, is the cumdach made for the Stowe Missal, the under and older side of which was made between the years 1023 and 1052. This famous book-shrine, which belonged originally to the Monastery of Lorrha, in the county of Tipperary, is made of oak and covered with silver plates. The centre of the upper side is occupied by a large rosette of metal, containing recent enamels, and a large oval crystal, from which diverge the arms of a cross, having at each end a large jewel. The four compartments formed by the arms contain silver plates engraved with figures representing the Crucifixion, the Blessed Virgin, a saint, and a bishop, and running round the border is the inscription, "Pray for Dunchad, descendant of Taccan, of the family of Chain, who made this." The basis of the design of the under side of the box is similar to that of the upper side, but the enamels and jewels are missing, and the silver plates between the arms of the cross are cut into triangular and square chequer designs respectively.

177. Anterior to the invention of printing the work of writing, transcribing and binding books, which were comparatively few and large, was principally but not exclusively confined to the monks who had a room, called a *scriptorium*, appropriated for this work. An early monastic binder in this country was Bilfrid, a monk of Durham (c. 720 A.D.), who covered a manuscript book now known as the *Textus Sanctus Cuthberti*, and adorned it with gold and silver plates, set with precious stones. The book, which is preserved in the British Museum, has now a cover of russia, its original binding having

been lost or destroyed. The ordinary monastic bindings of the Middle Ages consisted of wooden boards over which rough skins were stretched; they were usually further protected by metallic corner plates, bosses, clasps and brass nails, so that the weight alone became a protection. Some of the books were so massive that the monks ingeniously hollowed out the thick wooden boards and placed within the cavity, which was guarded by a metal door, a pair of spectacles, a crucifix or other sacred relic. These volumes were of such ponderous weight that credence may be given to the story that one of Petrarch's legs was in danger of being amputated because it had been badly bruised by a tome which had fallen on it. Erasmus says of such a book, as for Thomas Aquinas' *Secunda Secundæ*, no "man can carry it about, much less get it into his head."

The favourite leather of the monks was made from the hide of deer, and for this purpose they themselves hunted the deer either in their own estates or in the forest of some neighbouring lord from whom they had obtained the necessary permission. The strong wooden covers, forming the foundations of the medieval books which they were designed to protect, were often the means of facilitating their destruction, because the wood frequently became worm-eaten and the grubs infested the leaves and riddled them with holes; it was these pests that suggested to the Scottish bard, Robert Burns, the following well-known epigram, which he wrote on the margin of a Shakespeare folio, possessed by a certain Scottish nobleman, whose literary propensities were a negligible quantity:

> Through and through the inspired leaves,
> Ye maggots, make your windings;
> But oh, respect his lordship's taste,
> And spare the golden bindings.

Chained books, *libri catenati*, were common throughout Europe in medieval times, and the practice of securing books in this way was not abandoned in England until the end of the eighteenth century, but it was discarded earlier in France. In chaining the books to the shelves one end of the chain was securely attached to the front edge of one of the covers, and the ring at the other extremity was made to slide along an iron bar fixed in front of the shelf on which the book stood.

178. Books requiring a more sumptuous binding than the monks were capable of executing were handed over by them to the goldsmith and lapidary to decorate. The Byzantine practice of ornamenting book covers with plates of gilt or silvered metal set with precious stones and ivory carvings was imitated in the Occident in the age of Charlemagne, during which period artistic bookbinding and the illumination of manuscripts were carried to a high degree of perfection. This method of ornamenting book covers existed for several centuries, and the beautiful specimens now in existence testify to the skill of the artificers of these times. Unfortunately very few specimens now remain, as the iconoclasts of the Reformation ruthlessly destroyed innumerable priceless treasures in books and bindings; in England in the reign of Edward VI, an act was passed which gave authority " to strip off and pay into the King's Treasury all gold and silver found on popish books of devotion." The extant bindings of this kind and the manuscripts which they adorn are frequently not contemporaneous. Many of the covers of the medieval books were so valuable that they were removed from old books and used either wholly or in part to beautify books of later centuries, and it is not unusual to find some covers made up of the work of several artists belonging to different periods and to various schools. An excellent fine binding having two radically different covers is that of the famous Gospels of Lindau, so called because this manuscript volume originally belonged to the Abbey of Noble Canonesses, founded in A.D. 834 at Lindau, on the Lake of Constance. This exceedingly fine binding was formerly in the possession of the Earl of Ashburnham, but in 1901 it was sold to Mr J. P. Morgan for £10,000. The lower cover, the earlier of the two, is regarded by Mr E. Cordon Duff as being of South German workmanship of the eighth century, but Mr Cyril Davenport, in his work, *The Book*, opines that it was " made about the later half of the ninth century." In the centre is a large cross *patée* silver gilt, in the middle of which is a stone surrounded by the inscription, IHS XPS DNS NOS (Jesus Christ our Lord), and adjoining are four enamelled figures representing the Saviour. The spaces between the arms of the Cross are occupied by chiselled work, in bronze, of interlaced animal forms of Irish design. The original corner ornaments were replaced, probably in 1594, when the book

was rebound, by symbolic figures of the four evangelists. The material is either gold or silver gilt, and the whole is enriched with jewels. The upper cover, which is of somewhat later date, is regarded as the finest example of Carlovingian art; it was probably made in South Germany about the end of the ninth century. In the centre is a gilt figure of the Crucified Christ on a cross of gold. In each of the upper divisions formed by the arms of the cross are two angels and in the lower are figures of the Virgin Mary and St John, and St Mary Magdalene and Mary the wife of Cleophas. The fine broad border is enriched with three rows of jewels, which are also used to adorn the whole cover.

179. A remarkably fine specimen of a binding with carved ivory work covers a Latin Psalter of the twelfth century in the British Museum. This manuscript was written and illuminated for Melissenda, wife of Fulk, count of Anjou and King of Jerusalem (1131-1144). The covers are of wood in which are inserted two beautiful Byzantine ivory carvings, jewelled with turquoises and rubies. On the upper cover are six scenes representing the principal incidents of David's life, enclosed within circles, and between them are figures symbolising the triumph of the virtues over the vices; the whole is enclosed by an elegant interlaced border filled with fishes, birds, and vine leaves. On the lower cover the design is similar: within the circles there are six scenes representing the works of Mercy, and between them are figures of birds and beasts.

180. To the thirteenth century belongs a good specimen of a book-cover in enamel. It is the cover of a copy of the Gospels of St Luke and St John, in Latin, bound in thick wooden boards, covered with leather stained red. The upper cover has a sunk panel of Limoges enamel on copper-gilt of the end of the thirteenth century. In the centre, within a vesica, is the figure of Christ in Glory, and at the corners are the symbols of the Evangelists; the figures are gilt with the heads in relief. Attached to the outer frame are plates of enamel, of leaf and flower pattern. Scattered throughout the libraries and churches on the Continent are many other fine examples of medieval bindings, and in this country, besides those in the British Museum, there are beautiful specimens treasured in the Victoria and Albert Museum and in the John Rylands

Library, Manchester, the latter library being very rich in jewelled book-covers, ivories and enamels.

181. The period of the invention of printing naturally marks a new epoch in the history of the bibliopegic art. Paper instead of parchment was generally used for the printing of books, volumes of smaller size were produced, and the bindings were adapted to the new conditions. The wooden boards, clasps, bosses and nails were gradually abandoned in favour of paste-boards, which were then made by pasting together sheets of paper, and leather and parchment were substituted as the materials for the covers of ordinary books. The books in libraries were arranged on the shelves with the fore-edges, on which the title of the book was written, to the front; or they were placed on their sides on inclined shelves, like a reading desk, so that the beautiful ornamentation which was lavished on many of them was visible.

In the infancy of printing the whole art of book production was in the hands of the printer—he was printer, binder and publisher—but with the progress of the typographic art bookbinding speedily passed into the hands of the stationers. From this time the bindings group themselves naturally into two classes: trade bindings and private bindings. The printer supplied his books in sheets to the stationer for binding, but the wealthy patrons of literature continued to follow the dictates of their own taste, and have their books bound sumptuously.

Each country pursued a distinct style of ornamentation, and therefore a survey of the art in the countries where it was extensively practised may conveniently be made.

REFERENCE LIST OF AUTHORITIES. *See* Section 224.

CHAPTER XIII

ITALY

By Geo. A. Stephen

182. The early Italian binders, unlike the binders of several other European countries, did not create and develop a national style of ornamental leather binding. The stamps used in the decoration of fourteenth century bindings were quite plain. In the fifteenth century, owing to the influx of Saracenic workmen from Sicily, German and Netherlandish printers and booksellers and Oriental workmen, several distinct styles of ornamentation existed contemporaneously.

Italy claims precedence in making several improvements in the art of bookbinding. This country led the way in the abandonment of the heavy bindings of wood, with the backs, corners and fastenings of leather; it was the first country to discontinue the use of pigskin as a covering for books; and in all probability it was in Italy that gold tooling was introduced into Europe.

183. The origin of the art of finishing books in gold tooling is involved in obscurity, but authorities are generally agreed that it originated in the East. In Syria it is said to have been used as early as the thirteenth century. Neither the manner nor the exact date of the introduction into Europe of this beautiful method of ornamentation is known; Germany and Italy have both been credited as being the country in which it was first practised, but Italy is now regarded as having the stronger claim to this distinction. It has been suggested by some writers that in Italy the art was copied from the ornaments of the manuscripts which were taken to Italy after the fall of Constantinople in 1453, or that it was carried there by the Greeks who flocked into Italy at the same period; but as the art was apparently not practised until the last few years of the fifteenth century it is considered more probable that it was brought to Italy by the Venetian traders in the course

of their commerce with the Levant. Aldus Manutius, the famous Venetian printer, is sometimes credited with having introduced gold tooling into Italy, but without any authority. It is probable, however, that the art was first practised in Venice, coincident with the establishment of his printing press in that city, as many of the earliest specimens of gold-tooled bindings cover books printed by Aldus.

184. The designs of the earlier Italian bindings are usually of an oriental character. The "Arabic knot" which was extensively and effectively employed by the early Venetian binders was derived directly from Persia, and the interlaced "cable pattern" resembling basket work or the twist of a rope was also borrowed from the East. In the latter part of the fifteenth century the greater number of Italian—particularly Venetian—bindings was executed in this style. These bindings were blind tooled and were ornamented with a rectangular frame of interlaced work, formed by the repetition of a stamp, between parallel lines; and soon after the interstices of the interlaced work were often filled with minute gilded rings or roundels. Towards the close of the fifteenth century small ornaments, such as circles, cinquefoils, single leaves, and pilgrims' shells were occasionally used in the corners, and just before the dawn of the sixteenth century the space within the panel was frequently adorned with a vertical row of ornaments. This plan of ornamentation was common until 1530, and was not entirely abandoned until 1575. From about 1520 to 1540 foliated ornaments in the corners, within a segment of a circle, were common. Two peculiarities are particularly noticeable in many of the fifteenth century Italian bindings: clasps at the top and bottom edges of a book as well as the two usual ones at the fore-edge are commonly found on large books, and less frequently a peculiar groove down three edges of the cover—a characteristic copied from the books bound in Greece, Bulgaria and Servia.

ALDUS MANUTIUS (1450-1515), who established his printing press in Venice in 1494, may have employed Oriental and Greek workmen who brought with them their art traditions, but it cannot be positively asserted that he had his own bindery. The Arabic knot appears, either impressed in blind or in gold, on many of the bindings attributed to the Aldi, and on one specimen the device of a dolphin is found,

tooled in blind. Foliated ornaments also appear on the Aldine bindings.

The early Venetian and Florentine gold-tooled bindings are distinguished for the exquisite taste displayed in their decoration, which was produced by a few simple tools; the solidity of the gilding, however, is not so excellent as that which characterises later work, a result probably due to the largeness of the tools used and the method of applying the gold. These tools reveal the influence of the typographic art; indeed, their character is often precisely similar to the ornaments used to embellish the letterpress.

185. The method by which many of the sixteenth century Italian bindings were decorated with sunk panels or compartments was directly copied from the Orient. The boards were of paste-board and the depressions were sometimes made by simply applying considerable pressure to the dies or stamps, but more frequently this effect was obtained by the ingenious use of two boards, the upper of which was cut to the correct shape and afterwards attached to the lower one. Some of these books have the raised ground covered with leather, and the panels hand-painted in colours and gold, while others have the whole cover hand-painted. The Venetian books finished in this manner frequently have heraldic central panels, those issued officially by the Venetian Senate commonly have the Lion of St Mark effectively painted on the central panel.

186. In the execution of bindings for JEAN GROLIER DE SERVIN, Vicomte d'Aguisy (1479-1565), the Venetian binders raised Venetian binding to its acme of perfection. Although Grolier is naturally and correctly regarded as a French bibliophile, the bindings made for him are essentially Italian in the principles of their design. He possessed one of the finest private libraries of his time, consisting of some 3,000 volumes with bindings of great richness and beauty. He became Treasurer of the Duchy of Milan in 1510, and he resided in Italy, with a few interruptions, until about 1535, when he was made one of the four treasurers of the Government. In 1547 he succeeded to the post of Treasurer-General of France, which office he held until his death. While in Italy he became the friend of Aldus Manutius, the celebrated Venetian printer. It is said that in appreciation of Grolier's friendship and pecuniary assistance, the Aldi printed on vellum or large

paper special copies of their books for Grolier, several of which were dedicated to him. Nothing is known of the workmen whom Grolier employed, neither has the name of the artist of his designs been revealed. It is not improbable that he himself originated some of the designs which have made his name a byword amongst craftsmen. The books which Grolier acquired in his earlier years—including many of his Aldine volumes—possess the distinguishing characteristics of Italian work of the time of his residence in Italy, and it is therefore inferred that they were bound by Aldus and his family. In all probability when he returned to France he took his Italian workmen with him, because the great rise in the artistic merit of French bindings dates from this time, and this fact gives colour to Fournier's view, that Grolier "with Italian methods created a French art." The Grolier bindings, the designs of which have been more frequently imitated than those of any other style, are usually classified into two distinct groups: (1) those bindings executed especially for him, and (2) those bound before being acquired by him either by purchase or gift. Although the bindings executed for Grolier are distinctly similar in style, yet they vary considerably in their ornamentation. The designs of Grolier's bindings generally consist of a geometrical pattern, occasionally coloured, united with arabesque work, the arabesques being solid, or azured, or in outline only. On some of his bindings, however, the geometrical pattern is devoid of arabesques, while in others the arabesque work occurs without the geometrical design. Azured tools, it may be noted, have a series of close parallel lines cut horizontally upon their face, and are so called because the colour blue in heraldry is represented in this manner; these tools were first used about 1530. The cover of *C. Plinii Secundi Epistolae*, 1508, an outline sketch of which is given at Fig. 37, is a typical example of the earlier Grolier designs, consisting of simple geometrical forms and solid leaf forms. On nearly all the books in the first class and on many of those in the second is found (usually stamped at the foot of the upper cover, but sometimes in the centre of a cover) the altruistic inscription Io. Grolierii et Amicorvm (Of Jean Grolier and his friends), which he apparently borrowed from his contemporary Maioli. This motto is in striking contrast to that which another book-collector

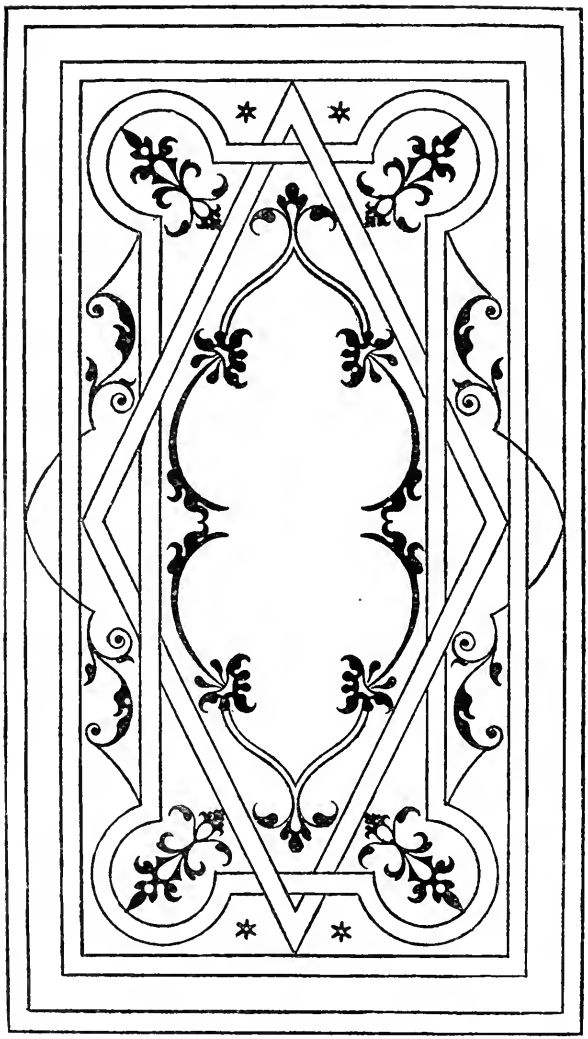

FIG. 37. Grolier Binding.

adopted: ITE AD VENDENTES (Go rather to them that sell). On both covers of most of Grolier's books is either a central shield or lozenge-shaped compartment, that on the upper cover usually containing the title of the book, and that on the lower the pious phrase PORTIO MEA, DOMINE, SIT IN TERRA VIVENTIVM (Let my portion, O Lord, be in the land of the living), modified from Psalm CXLII, 5. Other legends occasionally occur on his bindings. Grolier's motto with several slight variations is also frequently found written with his own hand in the insides of the volumes. Sometimes Grolier's arms are found on his volumes, and on a few an emblem appears.

The majority of his books are bound in fine morocco which he procured from the Levant traders, while others are in calf, both leathers usually being either light or dark brown in colour.

187. Another famous book-collector who enjoyed the acquaintance of Grolier is TOMMASO MAIOLI (*c.* 1507—*c.* 1559), whose history, unfortunately, remains almost entirely in oblivion. The bindings of Grolier and Maioli are somewhat similar in style, but Maioli's designs are usually more florid in character. The distinguishing feature of Maioli's designs is the flowing scroll-work which is freely interlaced with the framework. His most usual design is made up of an elegantly floriated border, forming a panel, with a central cartouche bearing the title of the book, and part of the field powdered with fine gold dots. Other of his bindings have a design formed by an interlaced fillet, the intervening spaces being filled with graceful scroll-work, ornamented with azured tools. The character of the tools is moresque, and they are almost invariably cut in outline and filled in with colour or azured; solid tools are the exception on Maioli's bindings. His bindings are, as a rule, further distinguished by the absence of raised bands. Most of his bindings bear the generous inscription, THO. MAIOLI ET AMICORVM, and some of them also have the enigmatical motto, INIMICI MEI MEA MIHI NON ME MIHI, of which no satisfactory translation has been found, but a suggested translation is, "My enemies are able to take mine from me, not me from myself." The latter legend is occasionally replaced by the sceptical one, INGRATIS SERVIRE NEPHAS (It is useless to help the ungrateful). One of his

FIG. 38. Maioli Binding.

specimens has the motto, PORTIO MEA, DOMINE, SIT IN TERRA VIVENTIVM, which is also found on Grolier's books. A beautiful effect on several of Maioli's plainer bindings was obtained by rubbing gold leaf into the leather, thereby imparting a peculiar and rich tint to the covers. The characteristics of Maioli's style are seen to advantage on the cover of the copy of *Hortus Sanitatis*, Strasburg, 1536, in the Bibliothèque Nationale, an illustration of which is shown at Fig. 38.

188. Another book-collector who had the pleasure of Grolier's acquaintance, and who adopted a similar motto is MARC LAUWRIN, or Laurin (1530-1581), of Watervleit, near Bruges. His books are very rare. Three of them in the Bibliothèque Nationale each bears on the upper cover the legend, M. LAVRINI ET AMICORVM (Of M. Laurin and his friends) and on the other, the motto, VIRTVS IN ARDVO (Courage in difficulty). In place of the latter he sometimes substituted VITA VT AQUA FLVENS HVMANA (Human life is flowing water), in allusion to his title of Watervleit.

The books that formed the collections of the Medici family, Demetrio Canevari, the physician to Pope Urban VIII, and Cardinal Bonelli also testify to the skill of the early Italian binders. During the earlier part of the sixteenth century "cameo" bindings were frequently executed by Italian binders. The boards have centre pieces stamped in relief, in imitation of antique gems or medals. Belonging to this class are the books which formed the celebrated collection of DEMETRIO CANEVARI (1559-1625). Most of these books were probably made by Venetian workmen between the years 1535 and 1560, and they could not therefore have been bound specially for him, as is generally supposed; they may, however, have been inherited by him. These books, which usually have a fine border of gold-tooled work, are adorned in the centre of both covers with a coloured oval cameo of Apollo driving a chariot drawn by two horses towards a precipitous rock on which stands Pegasus. Around the cameo on a ribbon is the motto, ΟΡΘΩΣ ΚΑΙ ΜΗ ΛΟΞΙΩΣ (Straightforward and not obliquely). There are two varieties of this elliptical cameo stamp: the greater diameter of the larger stamp is perpendicular, while that of the smaller is horizontal. On some examples the title of the book appears on both covers in a cartouche above the stamp. The copy of

FIG. 39. Canevari Binding.

De Historia Anglica of Polydore Vergil in the British Museum, of which an illustration is shown at Fig. 39, has a typical Canevari binding.

A very fine specimen of these Italian cameo bindings is Grolier's copy of Celsus' *De Medicina*, dating from the end of the fifteenth century, which is exhibited in the British Museum. The medallion in the centre of the upper cover represents Curtius leaping into the abyss in the Forum at Rome, and on the lower cover is a similar one of Horatius Cocles defending the Sublician bridge against the Etruscan army under Lars Porsena.

189. A large number of other beautiful bindings were produced at Venice in the sixteenth century, the ornamentation of which was effected by means of a variety of stamps of different sizes, some cut solid, some azured, and others in outline. About the middle of the sixteenth century the sides were frequently adorned with graceful curves charged with foliations of varied form in combination with interlaced work, the centre-piece having a reserved space for armorial bearings or the owner's name. Good examples of this style may be seen on the bindings executed for Cardinal Michael BONELLI (1566–98), the arms in some cases being ensigned with the cardinal's hat.

Italy did not maintain her pre-eminence in fine binding after the middle of the sixteenth century; towards the end of that century the art rapidly deteriorated and never regained its former position, although highly artistic bindings were produced at a later date. Italian bindings from the sixteenth century are chiefly heraldic in design. Many heraldic bindings were executed for the dignitaries of the Church of Rome up to the time of Henry, Cardinal of York; the arms in these cases usually being ensigned with a cardinal's hat or the tiara and cross keys.

REFERENCE LIST OF AUTHORITIES. *See* Section 224.

CHAPTER XIV

FRANCE

By Geo. A. Stephen

190. The great renown of French bookbinding, which led M. Ernest Thoinan to place on the title-page of his work, *Les Relieurs français*, the dictum, "La Relieure est un art tout français," must to some extent be attributed to the community known as the Guild of St Jean Latran, which was established in Paris in 1401. This Guild embraced and protected all persons engaged in the production and sale of books, and did much to foster the art until the period of the French Revolution, when, by a decree of the Assembly, the Guild ceased to exist.

The earliest French bindings merely consisted of two boards covered with white skin. In the thirteenth century the leather bindings were ornamented with perpendicular rows of small stamps, either arranged closely together or separated from each other by parallel-ruled lines. In the fourteenth century and throughout the greater part of the fifteenth century the prevailing plan of ornamentation was a series of narrow perpendicular rows of oblong stamps alternating with three-line fillets. Small stamps were used to decorate bindings in the East and South-East of France at a later date than in other parts of that country, but in the closing years of the fifteenth century the stamps usually increased in size. About 1500 the vertical rows of small stamps began to be replaced by roll-stamps. During the reigns of Louis XII and Francis I the French bindings were frequently ornamented with a roll-produced border, the enclosed space being filled with three perpendicular bands of unequal width, that in the middle—the widest—being stamped with the arms of France ensigned with the royal crown.

191. Panel stamps began to be used on French bindings during the latter half of the fifteenth century, the earliest

known specimen dating from about 1480. In France, the panel stamps were generally of a pictorial character, of which a great variety was used.

A large panel stamp with the figure of Christ and the instruments of the Passion was used by ALEXANDRE ALYAT, a Paris stationer, about the year 1500. About this time EDMOND BAYEUX, GILBERT FERRER, HEMON LE FEVRE, and ANDRE BOULE used panels representing the martyrdom of St Sebastian. Boule also used a panel depicting St Thomas Aquinas and St Katherine of Siena, between whom is the figure of Christ on the Cross. P. GERARD made use of a panel depicting the Crucifixion. JEHAN NORYN used four panel stamps, the finest of which represents the vision of the Emperor Augustus (Ara coeli), and has the binder's initials at the foot. Another panel with Noryn's initials has a figure of St Michael in plate armour and mantle. His other two panels bear his name in full; the one has a formal acorn design, and the other depicts Bethsabee bathing. JEHAN DUPIN employed two panel stamps, the one depicting St Barbara and St Nicholas, and the other the Annunciation. A number of other French binders also stamped their books with panels, many of which are described in Weale's *Bookbindings and Rubbings of Bindings in the National Art Library, South Kensington Museum*, 2 parts.

There is a close resemblance between many of the stamped bindings produced in Normandy and those with English devices which were supposed to have been produced in England. Indeed, as the trade relations between the stationers in this country and those in Caen and Rouen were very intimate, it is quite probable that some of the bindings bearing English devices may have been executed in Normandy.

Four notable binders of the early sixteenth century were JEHAN MOULIN, who used two panels in which a miller figures, doubtless as a punning allusion to his name; R. MACE, who employed, among others, a panel representing the Annunciation; JEHAN HUVIN, who used a panel with the figures of St Michael and St Nicolas; and DENIS ROCE, who employed a panel containing the figures of four saints.

192. The French binders undoubtedly gained their knowledge of the art of gold tooling from the teachings of Italy, although it is uncertain whether they did so from Italian work-

men who migrated to France during Grolier's sojourn in Italy, or from the craftsmen whom he is said to have taken with him on his return to France. Without doubt the French school of binding owes its rise to Italian workmen, and its development to the patronage of the great French book-collector.

The excellent bindings stamped in gold, which were executed under the direction of GEOFFROY TORY (*c.* 1485-1533), synchronize with the Grolier bindings. This celebrated artist was also royal printer to Francis I. The stamps of different sizes which he himself designed to decorate his bindings are elegant arabesques in the contemporary Italian style, of which the famous *pot cassé* forms a part. In the smaller stamp only the broken pitcher appears, but in the larger stamp the vase is pierced by a wimble or *toret;* the device was apparently designed in allusion to the death of his little daughter Agnes, but it is also considered to be a punning device on the name Tory.

FRANCIS I (1494-1547) was an enthusiastic collector of handsome bindings who had some of his books bound by Etienne Roffet, called Le Faulcheur. His bindings are usually decorated with a semis of the crowned F and the fleur-de-lis, and are generally stamped with his arms and device, a salamander in flames, accompanied by the motto, NUTRIO ET EXTINGUO (I nourish and extinguish). The emblem and the motto, which were intended to signify, "I cherish the good and I extinguish the evil," were given to him in his youth by his tutor.

193. In the middle of the sixteenth century the art of bookbinding was brought to its greatest perfection, and this period is aptly called the golden age of bookbinding. The kings and nobility vied with each other in the possession of sumptuous bindings.

The signification of the emblems which occur on the bindings executed for HENRI II (1518-1559) and DIANE DE POITIERS (1499-1566) has been the subject of much controversy. When Diane first became a widow her bindings were stamped with an arrow, surrounded by branches of laurel, springing from a tomb, and the motto, SOLA VIVIT IN ILLO ("She lives only in him"); but when she became the mistress of the Duc d'Orleans, afterwards Henri II, she suppressed the tomb and altered the motto to SOLA VIVIT IN ILLA,

thereby rendering it ambiguous. Usually her bindings are adorned with ornaments in conformity with her name—the crescent Moon, bows, arrows and quivers—and many of the bindings executed for her royal paramour, Henri II, have similar devices of the chase with the initials H and D interlaced. It is maintained by some persons that these initials were intended to represent "Henri" and "Diane"—and this view was held by Diane's enemies—but they have also been interpreted as "Henry Dauphin" and "Henri Deux"; the balance of opinion, however, is in favour of the former view. Fig. 40 is an illustration of the cover of a copy of *Architecture de Marc Vitruve*, Paris, 1547, bound in white calf skin, now in the Bodleian Library, showing this cipher at the top and bottom of the design.

KATHERINE DE MEDICI (1519-89) also had a taste for fine bindings, and possessed a library of sumptuously bound books. The arms of France usually appear on her bindings, with a monogram formed of an H intertwined with two C's surmounted by a crown. A crowned K is also frequently found upon them.

194. A new style of ornamentation became prevalent towards the close of the reign of Charles IX, the distinguishing features of which are wide geometrical compartments, formed by interlaced bands. The compartments were at first left unadorned, with the exception of that in the centre. HENRI III (1551-1589), who appreciated fine bindings no less than his mother, adopted this style and took a morbid pleasure in having many of them decorated with skulls, cross-bones, tears and other lugubrious emblems, frequently accompanied by the legend, SPES MEA DEVS (God is my hope), and less commonly by MEMENTO MORI (Remember death). NICHOLAS EVE bound for him forty-two copies of *Le Livre des Statuts de l'Order du Sainct Esprit* in orange morocco, which time, in some cases, has changed to olive-brown. The British Museum possesses one of these books and another is in the Bibliothèque Nationale. The covers have a semis of fleur-de-lis and tongues of fire arranged in alternate rows, with the cipher (an H interlaced with two lambdas λ λ) of Henri III and Louise of Lorraine in the corners. In the centre of the upper cover are the arms of France and Poland, beneath which are the crowned H and two laurel branches, all enclosed

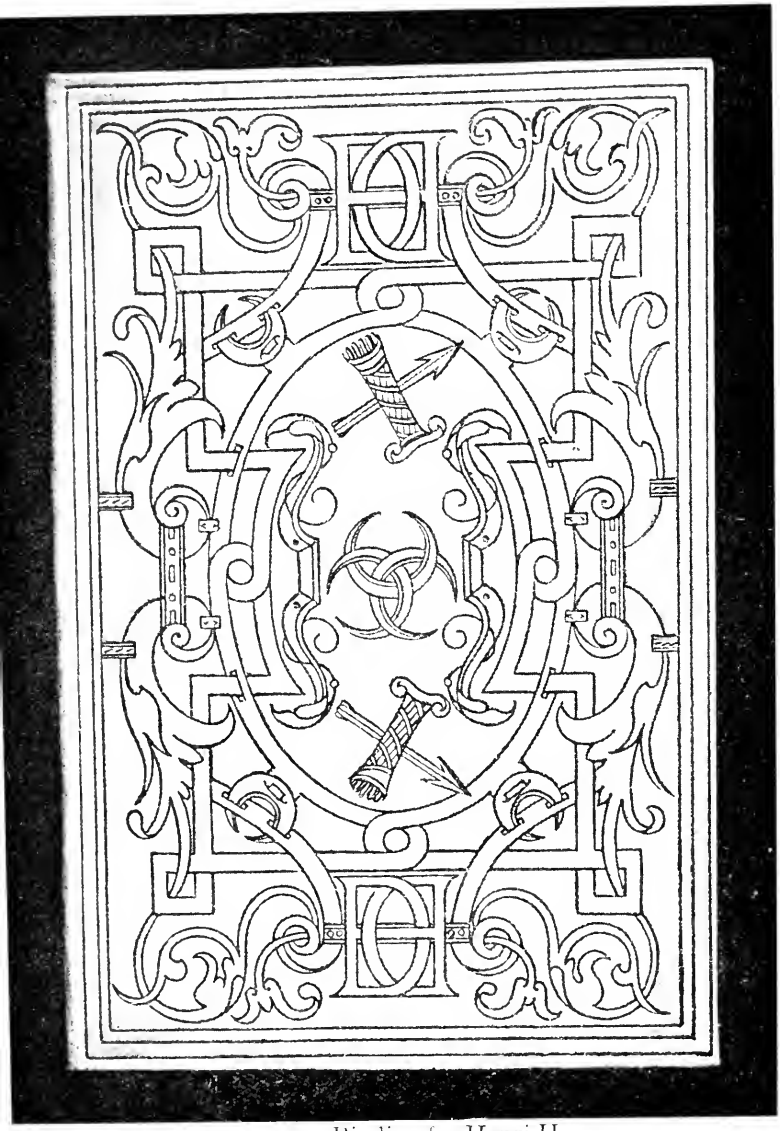

FIG. 40. Binding for Henri II.

by the collar of the Order of the Saint-Esprit, and surmounted by the royal crown bearing the motto, MANET VLTIMA CÆLO (The last remains to heaven). In the centre of the lower cover are the arms of the king alone. The symbol of the Holy Spirit is also represented four times on each cover, near the royal arms.

NICOLAS AND CLOVIS EVE, whose relationship to each other is uncertain, are both credited (especially Clovis) with having introduced a species of bookbinding known as bindings "à la fanfare," but on insufficient data. The "fanfare" style of ornamentation is distinguished by geometrical compartments formed by interlaced fillets, the intervening spaces being filled in with sprays of palm and laurel, and other foliated ornaments. The designs of the authenticated bindings of Nicolas Eve are different in character to the "fanfare" style, while no authentic work of Clovis Eve is known. The name now given to this beautiful style was not applied to it until the Restoration, when a book having *Fanfare* for the principal word of its title was bound for Charles Nodier by Thouvenin, who ornamented the cover with a design of this character. To Clovis Eve are attributed the choice small bindings which are popularly supposed to have been bound for MARGUERITE DE VALOIS (1552-1615). These bindings, which are usually in red, olive-green or citron morocco, are adorned with vertical rows of small ovals, each enclosing a marguerite or other flower: minute leaves spring from the outline of the ovals, and the spaces between them are occupied by flowers, quatrefoils and stars. The central compartpartment—which is larger than any of the others—of the upper cover is occupied by three fleurs-de-lis on a bend; that of the lower by three lilies in flower, surrounded by the legend, EXPECTATA NON ELVDET (Waited for, it shall not escape). The borders are adorned with palm and laurel branches and stars. Mr W. H. J. Weale states that there is no evidence whatever to support the view that these bindings were bound by Clovis Eve, or that they were executed for Marguerite de Valois, and M. Guigard in his *Armorial du Bibliophile* points out that these books were probably bound for Marie Marguerite de Valois de Saint-Rémy, the daughter of a natural son of Henri III.

At Lyons about this time a large number of bindings were

FIG. 41. "Fanfare" Binding for J. A. de Thou.

executed, the decoration of which was produced by impressions in gold from engraved plates in imitation of the best hand-work of the period.

The library of the illustrious JACQUES AUGUSTE DE THOU (1553-1617), whose name, in the annals of bibliophilic fame, ranks second only to Grolier, included some of the finest examples of books decorated in the "fanfare" manner. An illustration is given, Fig. 41, of one of De Thou's books tooled in this style; it is a copy of *Valerii Maximi Dictorum Factorumque Memorabilium*, Antwerp, 1547, in the British Museum. In the centre of the cover are the arms of De Thou. Many of his books, however, bound in red, olive, or citron morocco, are finished in a simpler manner: the boards are plain, having a few border lines in gold and his coat of arms or cipher in the centre, surrounded by laurel branches, while the backs only have the title of the works and his cipher. The armorial stamps vary considerably, according to the circumstances of his life.

The books bound for LOUIS XIII were generally adorned with a semis of fleurs-de-lis or with vertical rows of fleurs-de-lis alternating with his initial L crowned.

195. In the early part of the seventeenth century a new and luxurious style was introduced with which the name of LE GASCON is associated. As to the identity of this personage nothing is known. The name "Le Gascon" may be either a patronymic or sobriquet, but it is generally regarded as the latter. The Le Gascon design, known as *pointillé*, is made up of interlaced bands, enclosing geometrical compartments which are filled in with innumerable gold dots, frequently elaborated into lines and curves of remarkable lustre and elegance. Le Gascon generally used red morocco of a peculiar tint for his bindings, and in some cases they are inlaid with leather of various colours. There is no authenticated binding of Le Gascon, but there are some *pointillé* bindings signed by FLORIMOND BADIER. Some authorities consider that Le Gascon is identical with Badier, but others are of opinion that they were different persons, because Badier's signed bindings are inferior to those usually attributed to Le Gascon. No binder has equalled the delicate *pointillé* work of Le Gascon, although he has had more imitators than any other binder, his work having been copied extensively in England, Holland, Italy and Germany.

MACÉ RUETTE (16– to 1644) succeeded Clovis Eve as the royal binder to Louis XIII in the early part of the seventeenth century. He is credited by La Caille with the invention of yellow marbled morocco and marbled paper. It has transpired, however, that marbled paper was invented and first manufactured in Turkey, but the method of preparing the paper remained unknown until Ruette discovered the secret. He and his son Antoine, who was the royal binder to Louis XIV, both produced bindings tooled "au pointillé."

The inferior work of Le Gascon's imitators and the use of elaborately engraved tools and roulettes led to a reaction in the latter part of the reign of Louis XV, when tools formed of lines or lines and imitation *pointillé* work were employed.

The bindings executed for LOUIS XIV (1638-1715) bear his arms in the centre; some of the bindings have a broad lace-work border, others have a fillet border and the field powdered with fleurs-de-lis or fleurs-de-lis and bees.

In 1698 LUC ANTOINE BOYET, occasionally called Boyer, was appointed the royal binder, and he retained that post until his death in 1733. He also bound for the Comte d'Hoym, the Marquise de Chamillart, Fléchier, Bellanger and other distinguished collectors. The bindings attributed to him are noted for their excellent forwarding and their doublures; their decoration is generally confined to a framework of gold lines, with ornamentation only at the corners and along the edges. Some of the stamps he used were engraved in imitation of *pointillé* work.

Some authorities believe that Boyet finished many of the so-called Jansenist bindings, named after the ascetic sect founded by Cornelius Jansen (1585-1638). The outsides of the covers of these bindings are devoid of any ornamentation, with the exception of a blind fillet, while generally, in strange contrast, the inside doublures are often elaborately tooled.

Towards the end of the seventeenth century Hilaire Bernard de Requeleyne, BARON DE LONGEPIERRE (1659-1721), of literary propensities, had his books sumptuously bound and ornamented with the Golden Fleece in commemoration, so tradition says, of the success accorded one of his plays, *Médée*. This device, which forms the only decoration of his bindings, usually appears in the centre and at the corners of the boards, and in the panels of the back. The bindings are

usually of morocco, some of them having finely tooled doublures, also decorated with the Golden Fleece, and the edges marbled under gold. The excellent workmanship of these volumes has led some writers to assume that they were bound by Boyet.

196. In the early part of the eighteenth century AUGUSTIN DU SUEIL, born about 1673, became a prominent Parisian binder and occupied the post of royal binder to Louis XV. Peculiar interest attaches to his name, as he is the only French binder who has received the honour of mention in English classical literature. Pope has immortalised his name in the fourth of his Moral Essays:

> His study! with what authors is it stored?
> In books, not authors, curious is my Lord;
> To all their dated backs he turns you round;
> These Aldus printed, those Du Sueil has bound.

It is a matter for regret that no authentic specimen of Du Sueil's work is extant. The style with which his name is associated was originated over forty years before his birth; it consists of a plain fillet of gold lines enclosing an inner frame, at the corners of which are small floral ornaments or the figure of a small vase containing flowers.

197. In the seventeenth and eighteenth centuries, under the impulse given to bookbinding by the fashion of book collecting, large families became celebrated as bookbinders. ANTOINE MICHEL PADELOUP (1685-1758), more commonly known as Padeloup le jeune, was the most distinguished member of a long family of his name. He was a royal binder to Louis XV, and became celebrated for the solidity and finish of his bindings and for their choice coloured leathers. Padeloup had an eclectic taste, and several diverse styles of ornamentation are mingled on most of his bindings; some of his bindings are quite simple in their decoration, while others are very elaborately tooled. He frequently decorated his books with a "dentelle" border, so called from its supposed resemblance to delicate lace. Many of his bindings may be recognized with certainty by the étiquette or ticket bearing his name which he frequently affixed to them.

Padeloup also executed, but with less success, several bindings with inlaid work in different coloured leathers; although these mosaic bindings were very well executed, the tile-like

design of many of them is considered to be feeble. The appreciation of inlaid bindings existed during the greater part of the eighteenth century, those bearing the name of LE MONNIER being very skilfully executed and noted for their richness. The Le Monnier family was a large family of bookbinders, the two most celebrated being LOUIS FRANÇOIS LE MONNIER and his son JEAN CHARLES HENRI (1757-1772); the latter is usually credited with the execution of the famous bindings bearing his patronymic, although it is possible his father may have had a share in the work.

Another large family of celebrated bookbinders was named Derome, of whom NICOLAS DENIS DEROME (1731-88), called Derome le jeune, was the most conspicuous. The bands of his books were "sawn in" so as to obtain hollow backs. He was nicknamed by Dibdin "the Great Cropper" because he was guilty of the nefarious practice of cropping the edges and margins of the books he bound, but his proclivity in this direction has been unduly emphasised. He earned great renown by his use of the dentelle pattern which had been introduced in the seventeenth century, and which became one of the most important styles of the eighteenth century. Although he took the dentelles of Padeloup as models, his designs are made up of the dentelle tools in combination, rather than in repetition; by his dexterous handling of these tools he brought these beautiful patterns to perfection. In the production of these designs Derome was probably inspired by the elegant wrought-iron work of contemporary metal workers. An essential figure in his choice dentelles is a small bird with outstretched wings; hence the term, "dentelles à l'oiseau." Another bookbinder of this period who excelled in *dentelles* was PIERRE PAUL DUBUISSON, who succeeded Padeloup as royal binder. He was an accomplished heraldic designer as well as a gilder and binder. The *motifs* of many of his designs may be found on contemporary tapestry and porcelains. Four other eighteenth century craftsmen of lesser note were PIERRE ANTOINE LAFERTE and FRANÇOIS LAFERTE, PIERRE VENTE and JEAN PIERRE JUBERT.

The French Revolution had a serious effect on the fine arts, and the bibliopegic art shared in the general decadence, and reached its nadir at that time. During that period few bind-

ings were produced, and these were generally decorated with patriotic or revolutionary emblems, such as the figure of liberty, a phrygian bonnet, or a sheaf of spears. In the Reign of Terror also, according to M. Libri, a horrible custom arose of binding books in *peau humaine*.

198. With the dawn of the nineteenth century attempts were made to restore the art to its former excellence. BOZÉRIAN'S efforts in this direction were limited, but THOUVENIN'S work was more successful, and to him must be attributed a good share of the credit of having laid the foundations of the modern school of French bookbinding. His most noted successors include Bauzonnet, Trautz, Lortic, Capé, Chambolle, Duru, and Niédrée, but the greatest impetus to the restoration of the art was given by TRAUTZ. Trautz entered into partnership with Bauzonnet, and their bindings were signed Bauzonnet-Trautz. After Bauzonnet had withdrawn from the dual partnership Trautz continued the business alone, altering the signature to Trautz-Bauzonnet. The bindings executed by Trautz are worthy of their high reputation: the forwarding is good, the tooling is delicate, and the materials are excellent. Many of his tools were modelled on the work of the old masters and he successfully incorporated the styles of such craftsmen as Le Gascon, Padeloup and Derome in his own. It is said that he always varied his designs, no two bindings being precisely similar. Besides being an excellent workman in gold tooling, he was a master of the art of inlaying, and his mosaics are as greatly valued by collectors as his other bindings.

The bindings of EMILE MERCIER generally lack originality, but they are noted for the excellence of their tooling; and Miss Prideaux states that he is called by his fellows *l'artiste impeccable*.

Of other modern French binders the names of LEON GRUEL, MARIUS MICHEL and his son HENRI MARIUS MICHEL, PETRUS RUBAN and CHARLES MEUNIER stand out prominently as those of craftsmen in the front rank. These binders have all done excellent work, and have been closely identified with the progressive movement which seeks to free artistic bookbinding from the trammels of the past and to give it new life.

REFERENCE LIST OF AUTHORITIES. *See* Section 224.

CHAPTER XV

GERMANY AND THE NETHERLANDS

By Geo. A. Stephen

199. Germany is remarkable for its ornamental leather bindings. Many fine specimens of ornamental leather work were produced in the fifteenth and sixteenth centuries by monks in their monasteries and craftsmen in their workshops; indeed, during this period the German leather bindings surpassed, in beauty and variety of ornament, the cut and blind-tooled leather bindings of all other European countries.

Half binding was apparently first practised in Germany for in that country in the fifteenth century, and until the sixteenth century had well advanced, a large number of books were bound in wooden boards and only the backs and a small part of the sides were covered in pigskin or leather. After the invention of printing German bindings, unlike those of Italy, France and England, retained for a considerable period their medieval appearance. It was not until after 1550 that the use of paste-boards found favour; throughout the sixteenth century and even beyond this time thick heavy boards, frequently with metal bosses, corners and clasps, were commonly used, especially for large folios.

The Germans ornamented their leather bound books either by cutting by hand designs on the leather or by stamping it by means of dies. The earliest cut leather binding known to Loubert is that of a small manuscript of the Gospels, probably written at Fulda about the end of the eighth or beginning of the ninth century. The simple decoration of this binding, which is regarded as contemporary to the manuscript, consists of a rectangular border of four straight lines enclosing four triangles formed by three diagonal lines connecting the opposite corners. In each of the triangles is a three-pointed ornament of Irish design.

Some of the sixteenth century bindings adorned with panel stamps have been described by certain writers as being of *cuir-bouilli* (boiled leather). In the fourteenth, fifteenth and sixteenth centuries *cuir-bouilli* was used for making various objects, such as bottles, caskets, sheaths for swords and knives, and cases for ivories and books, but the present writer has been unable to trace any bindings of *cuir-bouilli*. In the Medieval Room of the British Museum may be seen a good specimen of a *cuir-bouilli* breviary case, which has loops at the side for a girdle strap. It is of Italian workmanship of the fifteenth century and the ornamentation of the sides consists of the coat of arms of the Aldobrandini family, with the crest on a helmet, a female head, and a padlock at each of the corners; the intervening spaces are filled with scrolls of leaves and flowers. In this cut work, now called *cuir ciselé*, the design would first be marked upon the surface of the leather, then cut in outline with a sharp knife, and the cut lines widened with a blunt-pointed tool to prevent their closing; next, the background would be depressed with a punch to give a stippled appearance and to raise the design in low relief, and finally the details of the design would be modelled with blunted tools. These early German cut leather bindings usually bear hunting scenes or scenes of religious life. A fine example of this work may be seen on a manuscript volume of the *Directorium Historicum*, 1450, by Thomas Ebendorffer of Haselbach, now in the British Museum. The dark brown leather cover is elaborately ornamented with designs cut in outline and brought into low relief by stippling the background. In the centre of the upper cover are the arms of the Emperor Frederic III (the eagle painted black), above which is a scroll lettered "Fridericus rex, etc., 1451," and below, in a panel, are the letters, A E I O U, the initial letters of the motto, "Austriæ est imperare orbi universo" ("It is given to Austria to rule the whole earth"); surrounding the whole is a border of branches of foliage, and at the foot is the binder's name, "Petrus, ligator." The binding has brass corner-pieces, bosses and clasps.

Another beautiful example of this cut work executed in the second half of the fifteenth century, also exhibited in the British Museum, is the binding of the *Panthcologia* by Rainerius de Pisis, printed at Basle about 1475. This binding of

brown leather (probably goat-skin) is interesting as showing the combination of the two German methods of ornamenting leather-bound books. The central panel of the upper cover has a hand-cut design depicting a monk seated on a chair before a desk, on which is an open book; in the left-hand upper corner is a shield bearing a pair of compasses, inverted and opened. Around the panel is a border, the upper and lower portions of which are formed of lozenge-shaped stamps, and the sides consist of lozenge-shaped stamps and roses. Both covers have ornamental brass corner-pieces. This incised leather work has been revived in France.

200. The earliest German bindings adorned with stamps date from the fourteenth century, but it was not until the succeeding century that this method became general. The prevailing system of planning the ornamentation of German book-covers was a framework of vertical and horizontal bands, the space enclosed being divided into lozenge-shaped compartments by ruled diagonal lines. The pattern thus produced was sometimes considered to be sufficient ornament, but frequently the bands were adorned with stamps, and stamps were also often impressed in the compartments and in the space between the border and the edges of the cover. It should be remembered, however, that although Germany and other countries each had its own characteristic plan of ornamentation, their systems were copied by binders of other nationalities.

In many of the monasteries there were binderies with a good stock of tools, and most of these monasteries had their own distinctive stamps with which the monks marked their library bindings. Frequently the binders placed their names on the sides of the books they bound, and the dates of the bindings. The earliest specimens of bindings so marked are those produced by an important binder named JOHANN RICHENBACH, chaplain of the Church at Geislingen (Würtemberg), who, as a rule, also added the names of the persons for whom the books were bound. The earliest example of his work is dated 1467. He usually bound his books in white pigskin—a favourite leather of the early German binders—to which he sometimes applied a little colour, and in the decoration of them he used with considerable skill over sixty stamps.

In the British Museum may be seen a binding by CON-

RADUS DE ARGENTINA (Strassburg), which is a good example of German fifteenth century binding. The cover, to which a chain is still attached, is divided by five-line fillets into compartments which are tastefully adorned with well-designed stamps, representing a rose, fleur-de-lis, an eagle, a pierced heart, etc.; one of the stamps is in the form of a scroll bearing the name of the binder, Conradus de Argentina.

A good contemporary binder who stamped his name on his books was JOHANN ZULCZPACH, or Sulczbach, probably a Suabian, but the best binder of this time was JOHANN HAGMAYER, of Ulm, who employed a large number of beautiful stamps and two magnificent large panels. One of the panels is adorned with figures of fourteen birds and a dragon, and the other with those of thirteen quadrupeds, a dragon and an ape, all of which are enclosed within gracefully curving branches of foliage and acorns. In the Catalogue of bookbindings in the Germanic Museum, Nuremberg, it is stated that the figures of the animals are copied from those on the playing cards engraved by the master E. S. of 1466. The binding of a copy of *Postilla Thome de Aquino in Job* in the British Museum which is stamped with these panels has been mistaken for hand work by Miss Prideaux* and W. Salt Brassington.†

There is documentary evidence to prove that a number of binders were employed by the celebrated printer, Erhard Ratdolt, who printed a considerable number of liturgical books, many of which have survived to our time and still retain their original covers. They are either in brown calf or pigskin, and generally have a border formed by two bands, the one a flowing stem of foliage with flowers and birds, the other depicting a hunting scene: the enclosed space is filled with vertical rows of interlaced strapwork with rosettes or dots in the openings. On the bindings of liturgical books, especially those produced in Suabia, Franconia and Bavaria, hunting scenes are quite common.

Another good fifteenth century binder was JOHANNES FOGEL, who decorated his books with some delicate stamps, including one of a half-length grotesque figure, crowned and encircled with foliage, playing on a lute. Mr Gordon Duff

* *Bookbinders and their Craft*, pp. 188-90.
† *History of the Art of Bookbinding*, p. 129.

affirms that he bound two of the extant copies of the Mazarin Bible.

201. In the fourteenth and fifteenth centuries the work of the binders of Cologne, Westphalia, and the towns and monasteries of the Lower Rhine, was similar to that done in the Netherlands. One Cologne binder of the fifteenth century, who belonged to a religious community, employed two panel-stamps, the one depicting Christ's entry into Jerusalem, and the other, the Adoration of the Magi; each is surrounded with the inscription, FRATER IOHANNES DE WESALIA OB LAUDEM XPRISTI ET MATRIS EIUS LIBRUM HUNC RECTE LIGAVI (Brother John of Westphalia, to the praise of Christ and His Mother, hath bound this book well).

The Cologne binders frequently adorned their book-covers with a number of small stamps of various designs, among which were escutcheons charged with the arms of the city and those of the diocese. Some of the books, however, were adorned with figures of saints, impressed from copper plates. One book in the Royal Library at Brussels has on one cover a panel bearing a figure of St Katherine crowned, with her right hand resting on a sword, and her left hand holding a wheel of torture; on the other cover is a similar panel bearing a figure of St Barbara. Both panels have diapered backgrounds.

202. At Nuremberg many very good bindings were produced in the latter part of the fifteenth century and the earlier years of the sixteenth century; and this town by its somewhat extensive book-trade, set the fashion in the ornamentation of book-covers. A new style or ornamentation arose about 1470, when the central panel began to be divided into double ogee-shaped compartments, formed by compound curves made up of a convex curve followed by a concave one; these compartments at first were formed rather inelegantly by the repetition of small stamps. This kind of diaper pattern gradually superseded that consisting of lozenge-shaped compartments formed by intersecting diagonal lines, and for nearly fifty years this design was greatly in vogue throughout the greater part of Germany, the places where it was not employed to any extent being Cologne, the towns of the Lower Rhine and Westphalia. The compartments were generally occupied by conventional floral or foliated ornaments, but in-

frequently such stamps were used in combination with those having the figure of a saint, an allegorical personage or an animal. At first the borders enclosing the panel were generally adorned with a narrow pole entwined with foliage. This was soon replaced by a ragged staff, which at first was enwreathed with foliage, but soon afterwards the leaves alternated with roses, and occasionally after 1500 the figure of a king with the sceptre and orb in his hands is seen emerging from the calyx of each flower. The ragged staff seldom appears after the end of the fifteenth century, the borders in the early sixteenth century usually being composed of flowing foliage and flowers. About this time also borders were sometimes formed of flowing vine-branches, with foliage, tendrils and grapes.

203. In the fifteenth century breviaries with bag-like ends were often carried in the hand or suspended from the girdle, if one may judge from their frequent occurrence in paintings and sculptures of German and Netherlandish artists of that period. Only a few specimens, however, are now in existence, probably because the prolonged leather ends of such books were cut off at a later date as encumbrances. A small Manual of Prayers, written in 1485, exhibited in the British Museum, is a typical specimen: the leather of the bottom edge of the covers is not turned in but is left in a long, hanging strip, tapering to a point and finishing with a plaited button, so that the book could be easily fastened to the waist-belt or dress.

In the sixteenth century panel stamps became exceedingly popular in Germany. Towards the middle of that century German bindings were often decorated with skilfully executed portraits of celebrities, usually surrounded by borders of roll-produced ornament. The excellence of these stamped bindings is more to the credit of the designer and cutter of the tools than to the binder, who frequently did not use the stamps to the best advantage.

204. The roll came into vogue about 1500, and quickly superseded the small dies which had hitherto been used for ornamenting borders. Many of the rolls were beautifully designed and finely cut; usually they were ornamented, either with human figures or foliage. The rolls with human figures on them generally had four compartments, with a different

figure in each, but some rolls had three compartments, and others had as many as six. The human figures on these rolls were those of allegorical, mythological, historical or contemporary personages. The rolls were most commonly engraved with the allegorical figures, with their respective symbols, of Faith, Hope, Charity, Fortitude, Sweetness, Prudence, and Justice; the mythological figures of Paris, Pallas, Juno, Venus, and Apollo and the Muses; medallion heads of the Roman classics, Julius Cæsar, Virgil, Ovid, and Cicero; portrait heads or busts of the reformers, Luther, Melancthon, Huss, and Erasmus, and the princes of the Reformation, the Elector John Frederic, Duke of Saxony, and the Landgrave Philip of Hesse; and figures of Lucretia stabbing herself, Judith with the head of Holofernes, David harping, Christ, the Evangelists, and St Paul.

205. The subjects of the panel stamps were similar to those of the rolls: allegories, mythological representations, Biblical scenes, and portraits of notable persons. The portraits of Luther and Melancthon are most frequently found on the bindings of this period, but those of Huss, Erasmus, the Emperor Charles V, John Frederic, Duke of Saxony, and the Emperor Maximilian II are also common. Many of the bindings having a panel of Luther on one cover have a panel of Melancthon on the other. Some of the full-length figures of these two reformers bear Cranach's well-known device and the engraver's initials, T. K. (i.e. Thomas Krüger). Krüger also engraved a number of other fine panel stamps.

A very fine panel stamp of a half-length figure of Charles V was used on some German bindings. The emperor is clad in a rich suit of armour and has an uplifted sword in his right hand, and an orb, surmounted by a cross, in his left. By his side is his helmet surmounted by a radiated crown. Above his head is a shield bearing the arms of Germany, and in the corners are two smaller shields bearing the arms of Aragon, Aragon-Sicily, and Spain. Round the pillars of Hercules at the sides is a ribbon inscribed, PLVS VLTRA, CAROLVS QVINTVS (More beyond. Charles V), and below is a tablet with the inscription, CAROLE MORTALES DVBITANT, HOMO SISNE DEVSVE: SVNT TVA SCEPTRA HOMINIS SED TVA FACTA DEI (O Charles, mortals doubt whether thou mayest be man or God: the sceptre of man is thine, but thy deeds are of God). Books

adorned with this stamp on one cover usually have on the other an equally beautiful one of John Frederic, Duke of Saxony, with sword and helmet.

Another fine panel stamp has a half-length portrait of the Emperor Maximilian II, clad in a rich suit of armour, with mantle and crown. In his right hand is the sceptre, and in his left, the orb. In the background are two pillars surmounted by escutcheons, the one bearing the imperial double-headed eagle of Germany, and the other, the arms of Spain quartered with Sicily. On a tablet at the foot is the inscription, MAXIMILIANVS II. D.G. ROM. IMP. SEM. AVGVS. GERMA. HVNGA. BOHEMI., ETC., REX. ARCHID. AVSTRI. DVX. SILESIE (Maximilian II by the Grace of God, Emperor of Rome, Ever Augustus, of Germany, Hungary, Bohemia, etc., King, Archduke of Austria, Duke of Silesia).

Some of the panels are surrounded by two or three borders of roll-produced ornament. These borders are frequently lacking in artistic execution, as the designs run into one another at the corners and are very incongruous. Frequently rolls with figures intended only for perpendicular borders were used for horizontal borders as well, so that the figures appear lying down. In some instances the corners are joined very clumsily indeed, a vertical border ending with half the figure of a person, and without any regard to the design of the adjoining perpendicular border. Very frequently, too, panels and rolls were used indiscriminately as regards their subjects, panels with Biblical scenes having borders with profane themes, and vice versa.

206. The art of gold tooling never became as popular in Germany as it did in Italy, France and England. It was not introduced until about 1530, and during the succeeding twenty years its use was very rare. Even then gold tooling did not supersede blind tooling, as in Italy and France; blind tooling continued to be generally employed for simpler work until the end of the seventeenth century. About 1550 Italian and French styles began to be copied. In 1566 JAKOB KRAUSE (d. 1585) was appointed a court binder to the Elector Augustus, in which year he received an order wherein it was distinctly stated that he should bind books in the German, French and Italian styles. In his official capacity Krause executed for the Elector a number of "blind" and

gilt bindings well finished and in good taste. He made use of several roll stamps: one bearing his initials, I. K., has half-length figures of John the Baptist, Christ, St Peter and St Paul; another, also marked with his initials, has half-length figures of St Paul, St John, Christ, and David; and a third has medallion busts alternating with three escutcheons bearing respectively the imperial eagle, the arms of Saxony, and a cruse or pot with flowers and the initials, I. K. The cruse was evidently adopted in allusion to the binder's name, the German word for cruse being *Krause*. Krause is renowned, however, for his gold-tooled bindings, which are of a great variety of styles and which are regarded as the most beautiful specimens of German gilt bindings of the sixteenth century. At least 170 of his gilt bindings are known, and these are mostly bound in brown, red or black leather. He had a large quantity of ornamental centre and corner stamps, which he used with fine taste and great skill. Some of his bindings bear the portrait of the Elector in the centre of one of the boards; on others the central compartment of the upper cover is occupied by the arms of Augustus, and that of the lower cover by the arms of his wife, i.e. the Danish arms. Krause often decorated the gilt edges of his books with moresque scrolls, coloured and punched, the fore-edge usually bearing the arms of Saxony.

A good binder contemporary with Krause was Kaspar Meuser, who was Krause's assistant from 1574 to 1578, and who was then appointed a second court binder. These two binders were succeeded by Christoph Weidlich, sometime in the service of Duke Friedrich of Württemberg, Mathias Hauffe, Bastian Ebert of Leipzig, and Kaspar Krafft of Wittenberg; their work, however, is considerably inferior to that of Krause and Meuser.

207. In the Netherlands, about the middle of the fourteenth century, the sides of books were decorated by means of panel stamps of latten or wood. A small book could be ornamented at one impression by one of these panel stamps, but for larger books several impressions were required, according to the size of the book. In the latter half of the following century large panels of quarto and folio size were made. After the invention of printing, when books were issued in comparatively large numbers and generally of smaller size than the manu-

script books, the utility of the panel stamp became apparent, and it was soon adopted in other countries, notably France and England. In the Netherlandish stamps the designs were often formal, consisting of graceful sprays of foliage, containing grotesque birds and beasts, and having round the edge of the panel a motto or text, with which was frequently associated the binder's name. A panel used by JOHANNES DE LENDE has the marginal legend: "Ob laudem xpristi librum hunc recte ligavi Johannes de Lende" (To the praise of Christ John van der Lende hath bound this book well), and the same legend was used by Johannes Bosscaert, Ludovicus Bloc, and others. Two other examples bear respectively the inscriptions, IACOB ILLVMINATOR ME FECIT (James, Illuminator, made me), and "Ave Gracia Plena, dñs tecum ecce ancilla Domini Jan Tys" (Hail, full of grace, the Lord is with thee: Behold the handmaid of the Lord. Jan Tys). The borders of an Antwerp binding, adorned with an elegant panel stamp containing in the centre a lion rampant ensigned with a crown, bears the inscription, JOHANNES DE WOUDIX ANTWERPIE ME FECIT (John van Woudix, Antwerp, made me). The names of several members of the Ghent family of van Gavere have also been perpetuated in this way. In the Royal Library, The Hague, is a binding bearing the inscription, OMNES SANCTI ANGELI ET ARCHANGELI DEI ORATE PRO NOBIS, JORIS DE GAVERE ME LIGAVIT IN GANDAVO (All the holy Angels and Archangels of God pray for us; Joris de Gavere bound me in Ghent). The members of this Ghent family of binders all used panels divided lengthways into two vertical compartments containing angels playing musical instruments, enclosed within graceful curves of foliage.

JOHANNES GUILEBERT, in the second half of the fifteenth century, was at work as a binder at Bruges. He made use of a panel, the interior of which is divided into three compartments, that in the centre (the narrower one) bears his name, JOHANNES GVILEBERT. The other two compartments are each adorned with a vine-branch, with foliage and fruit, forming four circles, in each of which is a pair of birds or monkeys. The border is formed of foliage and fruit. A volume in the University Library, Ghent, adorned with this panel, has the following inscription written on the inner side of one of the covers, "Jan Guilebert, die men heet Meese,

heft desen boue ghebonden" (John Guilebert, commonly called Titmouse, hath bound this book).

208. In the first half of the sixteenth century PAUL VAN VERDEBEKE bound a number of large folio registers at Bruges, some of which are adorned with eight stamps and a panel of St Anne and the Blessed Virgin, in which the binder and his wife are seen in a kneeling posture. This panel is of peculiar interest, as the bindings on which it occurs furnish the earliest examples of bindings bearing a portrait of the binder. The sixteenth century witnessed the decadence of artistic binding at Bruges.

At the Convent of St Jerome at Ghent, the BROTHERS OF THE COMMON LIFE were noted for the excellent manuscripts and bindings which they produced. Two specimens of their binding are adorned with a panel representing their patron Saint, St Jerome, kneeling before a crucifix. In the background, beyond the mountains, is a view of the Belfry of Ghent, surmounted by the dragon, and the spires of three churches.

VICTOR VAN CROMBRUGGHE was a noted Ghent binder who worked in the early sixteenth century. He used several panels, including one representing the Scourging at the Pillar, and another, the Image of Pity, inscribed ECCE HOMO (Behold the man!).

In the National Art Library, South Kensington, is a fine specimen of the work of NICHOLAS VAN DOERMAEL, who practised his craft at Antwerp in the earlier part of the sixteenth century. The brown calf binding is adorned with a panel of the Emperor Charles V, clad in a rich suit of armour, and at the foot of the cover is an escutcheon charged with the binder's trade mark and initials.

Certain bindings bearing the initials I. P. and the motto, "Ingenivm volens nihil non" ("A willing mind is all"), are assigned to a binder associated with the Augustinian Priory of St Martin and St Gregory at Louvain. The finest panel used by this binder has in the centre a medallion portrait of a man, surrounded by flowing branches of foliage and fruit, and below is a figure of the dying Cleopatra.

Binderies were established in many other monasteries in the Netherlands, and the books were usually stamped with a distinct mark, a discreet practice in an age when there was interchange of books between monasteries, and when monastic books were constantly lent to laymen.

CHAPTER XVI

ENGLAND

By Geo. A. Stephen

209. In England the earlier history of the art is obscure, as very few specimens of ancient English binding have survived to our time. This paucity of bindings is mainly due to the iconoclasts of the Reformation, who ruthlessly destroyed innumerable priceless treasures in books and bindings.

As early as the twelfth century binding was practised with great success in this country, and Durham, Winchester, and London, with several other cities and celebrated monasteries, had each its school of binding producing work of a high order of merit. The sides of these books were ornamented in "blind" by impressing on the leather dies or stamps of various shapes, cut in intaglio so as to leave the designs on the book in relief. The researches of Mr W. H. James Weale, formerly the keeper of the National Art Library, South Kensington, have proved conclusively that at the end of the twelfth century England was foremost of all Continental nations as regards these bindings. In a paper read before the Society of Arts in 1889 on "English Bookbinding in the Reigns of Henry VII and Henry VIII" (see *Journal of the Society of Arts*, 1888-9, vol. XXXVII, pp. 309-314), he referred to English bookbinding of the twelfth century in the following terms: "The leather and other materials employed, and the binding itself were excellent; the stamps used for the ornamentation of the covers have never been surpassed for beauty of design and execution." The early bindings nearly always had wooden boards covered with brown leather. The prevailing plan of ornamentation is peculiar to England: a parallelogram composed of small stamps formed the border, and enclosed were small dies arranged either to form other parallelograms, or circles, or segments of circles. The inventive capacity of these early binders was so great that by the repetition of a few

small dies they produced a great variety of designs; of the extant bindings no two designs are alike. The four large volumes of the Bible written and bound for Hugh Pudsey, Bishop of Durham (1153-1195), are noteworthy monuments of the excellent twelfth century work of the Durham binders. These magnificent volumes are covered in brown leather, decorated with fine interlaced chain-work and impressions of a large number of stamps of various shapes representing men in different positions, various fabulous animals, and palmated leaves. The designs on several of these stamps bear a great resemblance to contemporary sculpture in Durham Cathedral.

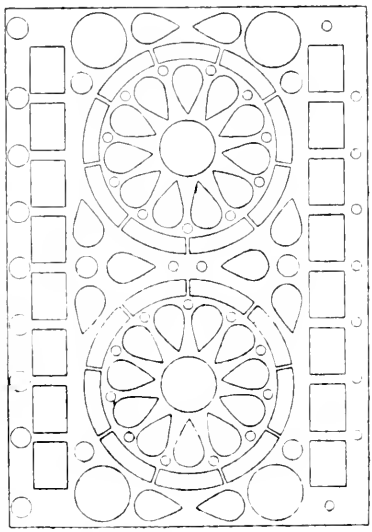

FIG. 42. Winchester Domesday Book.

A fine specimen of the early Winchester work is the "Winchester Domesday Book" of the twelfth century, now preserved in the Library of the Society of Antiquaries. There is no interlaced work on the covers as on some of the foregoing bindings, but they are ornamented with a series of stamps of beautiful execution. Fig. 42 shows the plan of ornamentation of the upper cover. The centre is occupied by two large circles, one above the other, each formed by eleven pear-shaped stamps radiating from a circular stamp and enclosed within a border formed by nine impressions of a curved stamp with a spray of foliage. The pear-shaped and circular stamps are adorned with dragons. The outer border is formed by two perpendicular rows of rectangular stamps, bearing two cockatrices addorsed, connected by circular and pear-shaped stamps.

In Stonyhurst College is preserved a manuscript volume of the Gospel of St John which was found at the opening of

the tomb of St Cuthbert in 1105. The binding of this book is regarded as being the earliest specimen of English ornamental leather binding; various conjectures have been made regarding its date, and it can only be definitely asserted that it was made not later than the early part of the twelfth century. The thin boards are of lime-wood and are covered with red leather. The upper cover has a border of two intertwined stems painted yellow, and enclosed are three compartments; the central compartment is ornamented with a foliated ornament in relief, and the upper and lower ones are occupied by elaborate interlaced ornaments formed by incised lines, which are coloured blue or yellow.

210. England did not long maintain her pre-eminent position as regards the art of ornamental leather binding. Mr Weale is "not aware of the existence of a single specimen of English leather binding executed in the latter half of the thirteenth or in the fourteenth century, which can be called artistic." English binding had entirely lost its distinctive style by the end of the fifteenth century, due probably to the introduction of printing and the influx of foreign stationers who took up their residence in London, Oxford, Cambridge, York, and other cities and towns of importance. These early stationers, who were freely permitted to sell and bind books, brought their own foreign stamps with them and decorated their books in the styles they had learnt abroad; consequently the stamped bindings of the reign of Henry VII and the earlier part of that of Henry VIII are tooled according to the German, Netherlandish or Norman manner.

211. It is thought that WILLIAM CAXTON (c. 1422-1491), England's first printer, probably brought his bookbinding tools from Bruges, as two of his stamps are very similar in design to those used on books bound contemporaneously in that city. Unfortunately very few of the books issued from his press (1477-91) now retain their original covers. In the British Museum is a copy of the second edition of the *Liber Festivalis* in its original covers. The brown leather binding has a border of a treble set of four-line fillets enclosing diagonal lines intersecting each other and forming four lozenge-shaped compartments, in which are stamps representing a griffin, and eight triangular compartments, having in each a small conventional flower. Pope, in his *Dunciad*,

showed his acquaintance with the books of our early printers:

> There Caxton sleeps with Wynkyn at his side,
> One clasp'd in wood, and one in strong cow-hide.

Caxton's stamps were used after his death by his successor, Wynkyn de Worde (d. 1534?), and some of them were afterwards used by Henry Jacobi.

At Oxford, THEODORE ROOD, of Cologne, in partnership with THOMAS HUNTE, an Oxford stationer, produced fine bindings adorned with stamps, evidently brought from abroad, which were arranged upon the old English plan previously described. The panel stamp was probably introduced into England during the closing years of the fifteenth century, but only a few specimens have been assigned to this century. A loose cover in the library of Westminster Abbey is regarded as furnishing the earliest example; it has no binder's mark, but the arms of Edward IV appear on it.

On all the bindings executed by RICHARD PYNSON (d. 1530) occurs a panel having the Tudor rose in the centre, and a border of floral design, in conjunction with which he generally used a replica, varying slightly in the details. One of his books, however, now in the British Museum, has a panel bearing his well-known device enclosed within a border of foliage and flowers. A panel similar to one of Pynson's with the Tudor rose was used by several binders, including FREDERIC EGMONDT, a foreign stationer who came to England in 1493. He also used an elaborate panel depicting two woodwoses standing on either side of a tree laden with fruit, and supporting an escutcheon bearing Egmondt's trade mark. His name in full appears at the foot of the panel.

212. The panel stamps used by the English and foreign binders practising their craft in England in the early sixteenth century are generally heraldic, but pictorial panels illustrative of Scriptural subjects are not infrequent. In the early Tudor period a number of binders adorned their books with a pair of heraldic panel stamps: the one showing an escutcheon, bearing quarterly France and England, supported by a dragon and a greyhound (the supporters were discarded in 1528); and the other, a large Tudor rose surrounded by two ribbons, supported by two angels, and bearing the distich:

HEC ROSA VIRTUTIS DE CELO MISSA SERENO
ETERNUM FLORENS REGIA SCEPTRA FERET.

This motto has been rendered:

This virtue's rose, from Heaven serene sent down,
Should, ever blooming, bear the royal crown.

The different binders who used these heraldic designs filled the surrounding ground with various ornaments, such as the sun, the moon, stars, flowers, and so forth, and they often added their initials and trade marks. The cross of St George on an escutcheon was frequently placed in one of the upper corners of the panel, and if the binder was a citizen of London he usually placed in the other corner the arms of the city. HENRY JACOBI, JULIAN NOTARY (d. 1520) and JOHN REYNES were the most important binders who used these panel stamps. Variations of the design with the Royal arms were used by binders whose initials are G.R., R.L., M.D., R.O., E.G., A.H., H.N., and G.G. The latter discarded the dragon and hound as supporters and substituted two angels. Unsigned panels bearing the armorial devices of Henry VIII, Katherine of Aragon, and Anne Boleyn were also used by binders of this period.

Although heraldic panel stamps were more popular in England than those of a pictorial nature, a number of the latter kind was used by the binders in the early sixteenth century. Panels depicting the Annunciation in various forms were frequently used, and panels depicting St Michael and St George, St George slaying the Dragon, and the Baptism of Christ were also employed. A good example of this class of work is a panel used by NICOLAS SPIERINCK (d. 1545-6), a foreign stationer who settled at Cambridge. It represents St Nicolas —evidently in allusion to Spierinck's Christian name—clad in cope and mitre, making the sign of the cross over a tub, from which three boys are emerging. One of the best-known pictorial panels, similar in design to a woodcut by Thielman Kerver, bears the device of JOHN REYNES (d. 1544), a London printer and binder, who did much good binding that compared very favourably with that produced on the Continent. This panel depicts the emblems of the Passion, arranged heraldically upon a shield, supported by two uni-

corns, under which is the inscription, REDEMPTORIS MUNDI ARMA (The Arms of the Redeemer of the world). Reynes' bindings always bear his device or initials, and in many cases both appear. Besides using panels, Reynes also employed a fine roll stamp ornamented with his trade mark, a hound, a falcon and a bee, amid sprays of foliage and flowers.

213. In the earlier part of the sixteenth century a number of interesting blind-tooled bindings, the chief characteristic of which is the ornamentation done by means of roll stamps, were produced at Cambridge by GARRET GODFREY (d. 1539), NICOLAS SPIERINCK (d. 1545-6) and JOHN SIBERCH (d. 1525), the first Cambridge printer. In a useful booklet, entitled *A Note upon Early Cambridge Binders of the Sixteenth Century* (1900), issued by Messrs John P. Gray and Son, of Cambridge, which gives a list of existing examples of these early Cambridge binders, it is stated that the authors in their researches found "much similarity in the general plan of decoration, i.e., a frame, formed by four bands within three-line fillets, intersecting each other at right-angles, the enclosed panel either covered by diagonal intersecting three-line fillets forming compartments, filled in with a large foliated tool; or, divided with three vertical bands of roulette pattern. We would designate the 'rolls' used as mythological, diaper, foliated, interlaced strap-work, and heraldic—the details of this latter show the Tudor rose, pomegranate, turreted gateway with portcullis, and fleur-de-lys, each ensigned with the royal crown; at the foot the binder's cipher."

The large number of bound books imported into this country in the earlier part of the sixteenth century had a detrimental effect upon English binders, and, consequently, for their protection, an act was passed in 1534 prohibiting the importation of bound books for sale. This statute was altered considerably by later acts, but it was not finally repealed until the year 1863.

214. The art of gold tooling is supposed to have been introduced into England about the latter end of the reign of Henry VIII by an Italian gilder who taught THOMAS BERTHELET, alias Bartlet (d. *c.* 1556). Berthelet, who was probably a Frenchman by birth, had a business establishment at the sign of "Lucretia Romana" in Fleet Street. He was the printer and binder to Henry VIII, and he continued to hold

the office of royal binder until after Mary's accession. His bindings were frankly imitations of the Italian styles, many of his bills describing the books he bound as being "after the Italian fascion," or "after the fascion of Venice." Other books are described as "bounde in crymosyn satyne," "covered with blacke velvet," or "gorgiously bounde and gilte on the leather." Most of his books are bound in brown calf or a white leather, probably deerskin or doeskin.

The art of gold tooling speedily became firmly rooted in this country, and it quickly superseded the plain stamped bindings of the early English binders.

The books bound for EDWARD VI (1537-1553) before his accession have the Prince of Wales' feathers, his initials, E.P., and the motto, ICH DIEN (I serve); after he was made king his books were decorated with the royal arms, sometimes with the initials E.R. crowned, and occasionally with a Scriptural verse.

Throughout the sixteenth century foreign designs prevailed in England. During the reign of Edward VI Grolier patterns were introduced into England, and gold tooling became usual. THOMAS WOTTON (1521-87) earned the title of "the English Grolier" from his adopting the style and motto of the great French collector. Most of his books are bound in brown calf, with elaborate interlacings outlined in gold and painted black, and finished with arabesques. Although the bindings are usually regarded as inferior in design and execution to those of Grolier, they rank as the finest gold-tooled bindings executed during the reign of Elizabeth. Some of his books bear the inscription, THOMÆ WOTTONI ET AMICORVM, while on others his coat of arms occurs.

ROBERT DUDLEY, Earl of Leicester (*c.* 1532-1588), had a good collection of finely bound books, nearly all of which were stamped in the centre with his crest, a bear and ragged staff, and his initials R.D., but a few of them bear his arms instead. Many of his bindings only bear his device on the covers, but on some of them a considerable amount of tooling appears.

The bindings executed during the reign of Elizabeth are superior in design and workmanship to those of preceding binders.

QUEEN ELIZABETH (1533-1603) was apparently more

partial to velvet and embroidered bindings than to those done in leather. There are, however, in existence a few gold-tooled bindings which belonged to her; some of them have her arms in the centre and azured corner-pieces, while others have the device of a crowned falcon holding a sceptre.

The bindings of this period reveal the influence of the Lyonnese school of art, particularly in the use of centre-pieces and azured corner-stamps.

There are in existence some finely bound books from the libraries of Archbishop Parker and Lord Burghley; the former was a great patron of literature, and he established at Lambeth Palace a workshop for the binding of his books.

JAMES I (1566-1625) was an enthusiastic patron of book-binding, and many sumptuous bindings executed for him are extant, some of which may have been done by the royal binders, JOHN GIBSON of Edinburgh and JOHN AND ABRAHAM BATEMAN. His books generally have his arms in the centre, heavy ornamental corner-pieces, and the field diapered with emblems, usually thistles, fleur-de-lis, roses, lions and tridents, which are sometimes used alone and sometimes in combination. Two of his best specimens have the royal coat of arms in the centre and the field powdered with thistles and fleur-de-lis in alternate vertical rows, between which daisies are sprinkled. His elder son, HENRY, PRINCE OF WALES (1594-1612), inherited his taste for fine bindings, and after the death of Lord Lumley Henry purchased his books and had many of them rebound in calf. Henry's books usually have his arms in the centre of the covers and various large devices, as crowned roses, heraldic lions, Prince of Wales' feathers, and fleur-de-lis, in the corners, or else the ostrich-feather badge with his initials, H.P., in the centre, and ornamental corner-pieces.

215. One of the most interesting names in the history of English bookbinding is that of Ferrar. NICHOLAS FERRAR (1592-1637) and his relatives, chiefly women, established a semi-religious community at Little Gidding in Huntingdonshire about the year 1625. His biographer, Dr Peckard, states that he employed a bookbinder "who taught the family, females as well as males, the whole art and skill of book-binding, gilding, lettering, and what they called pasting-printing by the use of the rolling-press." The inmates of this

establishment produced the remarkable "Harmonies" of the Scriptures, one of which was bound for Charles I by Mary Collet. Eleven of these Harmonies are now known to exist: six of them are in leather tooled in gold; four are in velvet heavily gilt, and one is in red parchment with the centre and corners of each cover ornamented with pieces of white parchment, pierced and gilded. Some of the embroidered bindings of this period have been ascribed to the so-called "Nuns" of Little Gidding without sufficient proof.

After the restoration in 1660 SAMUEL MEARNE (d. 1683) was appointed the royal bookbinder to Charles II, and he continued to hold this office under James II. He is credited with having bound for Charles II a number of books, usually of red morocco, in a simple manner: the sides of these books have a rectangular panel formed by gold lines, and at each angle are two C's interlaced between two small sprays of palm, and surmounted by a crown. Mearne introduced a style, which became distinctively English, known as the "cottage" pattern, in consequence of the top and bottom of the rectangular panels on the boards resembling in form a cottage roof or gable, with projecting eaves. The spaces are richly decorated with sprays of foliage and masses of small gold tooling. Mr Horne is of opinion that this style had its origin in France, but Mr Davenport, in his monograph on Mearne, declines to accept this statement until it can be substantiated with evidence. The cottage style soon became prevalent and lasted with minor modifications until the reign of George II, thereby existing for a longer period than any other English or foreign style. Mearne's books are chiefly bound in beautiful red morocco. He also invented another beautiful design in "all over" style, in which he combined the *pointillé* work of Le Gascon with a series of two-horned curves. Mr Davenport holds Mearne's work in high esteem, and regards him as one of the three greatest bookbinders who have appeared in England, the other two being Thomas Berthelet and Roger Payne.

During the latter half of the seventeenth century some good imitations of Le Gascon's *pointillé* work were produced, as well as some good inlaid mosaic bindings. In Scotland, too, during this period, and until the early years of the succeeding century, some very good bindings, generally adorned with foliated ornaments and dots, were executed.

216. About 1720 the Harleian style came into vogue. It derives its name from the books in the famous Harleian Library which was founded by ROBERT HARLEY, Earl of Oxford (1661-1724), and afterwards considerably augmented by his son, Earl Edward (1689-1741). The books were solidly bound, chiefly in red morocco of inferior quality, by two eminent craftsmen named ELIOT and CHAPMAN. These bindings have a French three-line fillet running round the edge of the side, within which is a broad tooled border, made up of two or three sprigs of various patterns, sometimes combining the pine-apple device, worked alternately, and a lozenge-shaped ornament in the centre completes the design.

In the middle of the eighteenth century THOMAS HOLLIS (d. 1774) employed Thomas Pingo, the Italian medallist, to cut emblematic tools for him, with which he ornamented the sides and backs of his books. Miss Prideaux, in her *Historical Sketch of Bookbinding*, states that he used these tools "on the works to which he considered them suitable; the caduceus of Mercury is found on books of oratory, the wand of Æsculapius on medical books, the cap of liberty on patriotic books, the owl on works of philosophy, and the pugio, or short Roman sword, on military subjects." It has been pointed out, however, that Hollis was not always very careful in using these pagan tools on "suitable" books. In the British Museum is a copy of John Toland's *Life of Milton*, on which occurs all the principal ornaments used by Hollis, with the exception of the cap of liberty. About this period English bookbinding, both as regards design and technique, had become decadent. The French emigrants at the end of the eighteenth century introduced their native style, and many distinguished amateurs who had learned the craft as a pastime carried it on in this country as a means of livelihood.

Towards the close of this century English bookbinding was revived and raised to a high position by the genius of the celebrated and remarkable ROGER PAYNE (1739-1797), whose name deserves to be respected, despite his irregular and dissolute habits. Besides being a clever finisher he was a good forwarder, and he cut his own tools, either because of his penury or because he could not find a skilful tool-cutter. "The great merit of Roger Payne," said Dibdin, "lay in his taste, in his choice of ornaments and especially in the work-

ing of them." The backs of his books are usually richly tooled, while the sides are less ornate, the tooling on them being chiefly confined to beautifully designed borders or corners.

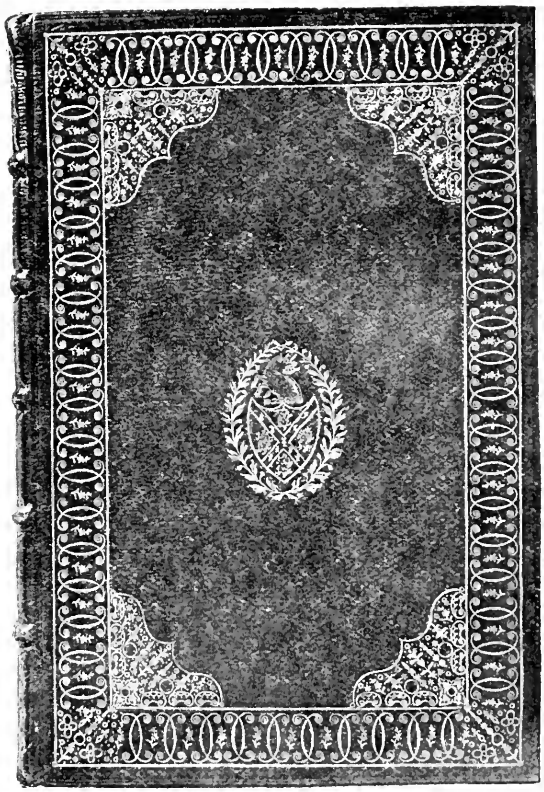

FIG. 43. Binding by Roger Payne.

On some of his bindings the design takes the form of a trellis work of vines. Fig. 43 is a pleasing example of his work. Some of his best work is found on books bound in russia leather which had then been recently introduced into England, or in straight-grained olive morocco, called by him

"Venetian," but he also frequently used red and blue moroccos. He was unfortunate in his selection of end-papers; he mostly used papers of a plain colour, either purple or buff, which did not harmonise with his leathers, and, being coarse in texture, they often became spotty. The "Glasgow Æschylus" (1795), bound for Lord Spencer and now in the John Rylands Library, is generally regarded as his chef-d'œuvre. Payne, in his later years, was for a time in partnership with a noted London binder named RICHARD WIER, whose wife attained celebrity as a skilful book-restorer. Wier and his wife had both been previously employed in binding and repairing books in the library of Count Macarthy at Toulouse.

217. About this time a new style of ornamentation known as "Etruscan" was invented and successfully pursued by JOHN WHITAKER. This style derives its name from the fact that many of the designs were copied in their proper colours, by means of acids, from the ornament on Etruscan vases. In other designs there were castles, churches, tented fields, and so forth, all executed in their proper tints. JAMES EDWARDS (1757-1816), of Halifax, also practised the Etruscan style successfully. In 1785 he took out a patent "for embellishing books bound in vellum by making drawings on the vellum which are not liable to be defaced but by destroying the vellum itself." The design was painted or printed on the under surface of transparent vellum, and the vellum was then pasted on the book cover which had previously been covered with white paper.

One of the best London binders of Payne's time was JOHN MACKINLAY, for whom Payne worked shortly before his death. Five German binders in London—BAUMGARTEN, BENEDICT, KALTHŒBER, STAGGEMEIER, and WALTHER—carried on the tradition of fine binding which Payne had revived, and to a greater or lesser extent they copied the style of their master, as did also CHARLES HERING and CHARLES LEWIS. Their bindings are chiefly servile imitations of the various historic styles, but they are distinguished for their technical excellence. The work of Kalthœber, who re-discovered or revived the method of painting on the edges of books under the gold, is frankly an imitation of Payne's style. Most of his bindings may be distinguished by the tooling on the backs, which was in the form of a star or

circular ornament. Payne's best imitator was CHARLES LEWIS (1786-1836), an especially good binder, who justly earned the encomium of Dibdin: "the particular talent of Lewis," he says in his *Bibliographical Decameron*, "consists in uniting the taste of Roger Payne with a freedom of forwarding and squareness of finishing peculiarly his own." He was a most excellent mechanical binder, and "his books seem to move upon silken hinges." For some time Lewis worked with JOHN CLARKE, whose usual work was tree-calf, for which he gained well-merited celebrity.

218. Of the more modern English binders, the names of FRANCIS BEDFORD (1799-1883), ROBERT RIVIERE (1808-1882) and JOSEPH ZAEHNSDORF (1816-1886) stand out conspicuously as accomplished workmen, although generally speaking their work exhibits very little originality. They were imbued with the principles of the old craftsmen, and they excelled in copying slavishly the best historical models with scrupulous fidelity and excellence of technique which have not been surpassed. Bedford, who worked for Charles Lewis, was an especially good forwarder, and his work was unsurpassed by that of any of his contemporaries. The work of Rivière, an entirely self-taught craftsman, also received high commendation for its solid English workmanship. Zaehnsdorf's work was very thorough in all its branches, and the materials he used were the best obtainable; his *Art of Bookbinding* is still regarded as a good treatise on the craft, although it has been superseded to some extent by Mr Cockerell's *Bookbinding and the Care of Books*. His son now carries on the establishment which he founded, and maintains the good traditions of the firm.

219. Towards the close of the last century Mr COBDEN SANDERSON (1840-), who is indebted to Mr ROGER DE COVERLY (another good craftsman who has done many tasteful bindings) for his knowledge of the craft, became a pioneer in the movement which strove to break away completely from the traditions of the past and to make the art of gold tooling again a living art. His work has had a most salutary effect on the craft, and he has succeeded in creating a distinguished form of decoration peculiarly his own; indeed, there is an increasing number of book-lovers who consider that as an original finisher he stands *facile princeps* of all

English bookbinders, past or present. His tools are all specially cut for him from his own designs, which are copied from natural forms. He says they "are all elemental, as I may call them, i.e., I have a separate tool for every separate flower, stalk, bud, leaf, thorn, dot, star, and so on, and I build up my patterns, and the motives of them, bit by bit, each composite portion of the pattern or motive being, like the whole pattern, the subject of deliberate arrangement." The design of each book, which is frequently the result of a personal study of its contents, is specially composed for the volume, and its title often forms an integral part of the plan of decoration. Although he admits that a decorative scheme may be suggested by the subject of a book, he denies that the design of a binding should be allegorical or emblematical: "Beauty is the aim of decoration and not illustration or the expression of ideas."

Several of his pupils have distinguished themselves, of whom Mr DOUGLAS COCKERELL, by his handiwork and teaching, has become the most eminent. His bindings exhibit much talent in design and craftsmanship. The names of Mr F. SANGORSKI and Mr G. SUTCLIFFE, who work in partnership, also stand out conspicuously as those of successful technical instructors of bookbinding, and craftsmen whose work is celebrated for its quality and its beauty of design. The bindings of Mr ALFRED DE SAUTY, the Instructor in bookbinding at the L.C.C. Central School of Arts and Crafts, are marked by their excellent forwarding and their artistic design. Good work has also been done by the late Mr JOHN FAZAKERLY, of Liverpool, who, on his morocco work, generally forsook the conventional plan of having the same design on both covers. Many of his books have either gauffred edges or edges painted under the gold.

220. In 1895 Mr GEORGE THOMAS BAGGULEY, of Newcastle-under-Lyme, took out a patent for tooling vellum and analogous materials in permanent colours, and the process is now designated the "Sutherland" decoration because of the patronage of the Duchess of Sutherland. The binder has limited the application of the process to vellum because he considers that no leather is sufficiently pure in colour to supply a satisfactory ground for unrestricted colour decoration, and on account of the delicate nature of the work he has,

with a few exceptions, confined this method of decoration to vellum doublures. The covering material of his books is generally morocco, sometimes left plain and sometimes ornamented in gold in the usual way. The "Sutherland" process combines gold and colour tooling in an exquisite manner, and some of the doublures, designed by Leon V. Solon, are veritable works of art that would satisfy the most fastidious connoisseur.

Miss S. T. PRIDEAUX is renowned for her bindings, which exhibit considerable skill and good taste, and for her writings on, and her valuable bibliography of, the craft of bookbinding. A glance at the illustrations in "A Catalogue of Books Bound by S. T. Prideaux from 1890 to 1900" will show the great success that has attended her efforts to produce dignified designs, unobscured by a burden of detail, so that the beauty of the leather covering is revealed. Among other lady binders who are doing work of considerable merit are Miss N. E. WOOLRICH, Miss ADAMS of New York, and Miss E. M. MACCOLL, who executes her brother's designs by the use of a small wheel, which permits curves of considerable complexity to be executed.

In 1898 a limited number of women-binders, including Mrs Traquair, Mrs Macdonald, Miss Bassett, Miss M. Sophia Smith, who were interested in the revival of artistic handwork, federated themselves into a GUILD OF WOMEN-BINDERS, with the view of placing their occupation on a financial basis. This Guild was originated and controlled by Mr Frank Karslake, and the members worked in their own homes or in local studios. They produced much decorative work—cut calf bindings, embossed leather bindings, as well as gold-tooled work—which met with considerable appreciation, and King Edward VII and other members of the Royal Family showed their admiration for their work in a practical manner by purchasing a selection of their volumes. In this year also the HAMPSTEAD BINDERY, consisting of a number of professional men-binders, was established, with principles practically the same as those of the Guild of Women-binders, viz., to make enduring workmanship of the first importance, and artistic excellence the next. An original design was made for every book bound in either bindery, except in one or two cases when a replica was ordered. The

Hampstead Bindery was especially remarkable for the originality of its designs, many of which were made by Mr Alfred de Sauty. Unfortunately both these organizations had a brief existence, and a large number of their bindings was sold by auction in the years 1900, 1901 and 1904. The book entitled *The Bindings of To-morrow* (1902) contains fifty facsimile reproductions in colours (by Mr Griggs) of the finest examples from both binderies.

Mr CEDRIC CHIVERS, of Bath, who is well-known for his patent "duro-flexile" library binding, has produced from his workshop many artistic bindings in gold-tooled and hand-wrought leather—the work of artists in his employ, of whom one of the most notable is Miss Alice Shepherd. He has also attained celebrity by his "Vellucent" bindings. The material used is transparent vellum, and its purpose is not only to preserve old bindings, but more particularly to protect books having covers bearing hand-coloured designs. This method lends itself to highly decorative work as it is possible further to beautify the design by the use of mother-o'-pearl, iridescent shell, and other similar materials, all of which may be covered and permanently protected by the transparent vellum, the surface of which may be tooled in gold in the ordinary way.

Much good work has also been done by Mr W. T. MORRELL, BIRDSALL AND SON, KELLY AND SON, JOHN RAMAGE AND CO., C. J. FORWARD AND SON, R. RIVIERE AND SON, and THE OXFORD UNIVERSITY PRESS. At the Brussels Exhibition in 1910 the Oxford University Press repeated its success at the Paris Exhibition in being the only British binding house to obtain the highest possible distinction, viz., a Grand Prix. There are capable men now engaged in the craft who are doing excellent work, and their names will doubtless go down to posterity amongst those of the most eminent craftsmen of the bibliopegic art.

221. While leather has been the material most generally employed for the covering of books on which the binder could exercise his technical skill, other materials have been freely used for the embellishment of book-covers. In the *Shyp of Folys of the Worlde*, by Alexander Barclay, published in 1509, the author has described the books possessed by the student as

Full goodly bounde in pleasaunt coverture
of damas, sattin, or els of velvet pure.

Although embroidered bindings have been produced on the Continent, the only country that has regularly produced them in any considerable quantity is England. Occasional examples of Dutch, French, German and Italian work are to be found, but only in England has there been a gradual development of style in this class of bindings. A good example of a Dutch embroidered binding of the seventeenth century is to be seen on a copy of the *New Testament and Psalms*, Delf, 1594, in the South Kensington Museum. The cover is of white silk, embroidered with coloured silks in short feather stitches, seed pearls, and gold thread stitched down. Fig. 44 is an illustration of the under side; the pattern consists of a medallion, containing a pelican in her piety, surrounded by well-balanced arrangements of flowers, fruits, and birds.

Embroidered bindings were very fashionable during the reigns of the Tudors and Stuarts, and fortunately a large number of choice specimens are preserved in the Bodleian Library, the South Kensington Museum, and in the British Museum, the last-mentioned being especially rich in fine specimens. Mr Cyril Davenport, by his official position in the British Museum, has had special facilities for devoting his attention to the subject of embroidered book-covers, and his *English Embroidered Bookbindings* (to which the present writer is indebted for much of the following information) is the first book to deal adequately with this important and interesting phase of bookbinding.

The principal fabrics upon which needlework has been lavished for embroidered covers are canvas, satin, and velvet, enriched with coloured silks, gold and silver thread, seed pearls, spangles, and purl. The designs have been broadly classified by Mr Davenport into four classes: (1) Heraldic, (2) Figure, (3) Floral, and (4) Arabesque. It is believed that the manuscript known as *The Felbrigge Psalter*, written in the thirteenth century, and now preserved in the British Museum, is the earliest example of an embroidered binding in existence, Mr Davenport being of opinion that the cover dates from the fourteenth century. The designs are worked on canvas with fine gold thread, the upper side being of the Annunciation and that of the under side being of the Crucifixion.

FIG. 44. Dutch Embroidered Binding. P2

One of the treasures of the Bodleian Library is *The Miroir or Glasse of the Synneful Soul*, dated 1544, in the handwriting of Princess Elizabeth (afterwards Queen); it is bound in canvas, and it is probable that the Princess worked the design with her own hands. Probably the earliest English embroidered binding in velvet is that which covers Martin de Brion's manuscript entitled *Tres ample description de toute la terre Saincte*, which was dedicated to Henry VIII. It is of rich red velvet, and the design, worked in silks, gold cord and seed pearls, consists of the royal arms surrounded by the Garter, surmounted by the royal crown, on either side of which is an H; in each corner is a Lancastrian rose.

Most of the books bound in velvet were executed in the Tudor period, and there are in existence handsome specimens that were produced for Henry VIII, Queen Mary, and Queen Elizabeth. A remarkable embroidered velvet cover that belonged to Queen Elizabeth is that on the copy of Archbishop Parker's *De Antiquitate Ecclesiæ Britannicæ*, printed by John Day in 1572, now in the British Museum. This cover is of green velvet, embroidered in gold and silver thread and coloured silks, and the design is unmistakably in allusion to the name of Parker: it is a representation of a park enclosed by palings which form the border; in the centre of the upper cover is a rose bush, and in each corner is a deer, each being in a different position.

During the period of the early Stuarts, while velvet bindings were still being occasionally produced, many books were bound in satin, generally white or cream, upon which fine effects were worked with coloured silks. Most of the books bound in satin are small devotional books, frequently having a symbolic design, or a representation of a Biblical character. Mr Davenport regards a *Collection of Sixteenth Century Tracts* that belonged to Henry VIII as perhaps the earliest existing English book bound in satin. The satin is red in colour, and is embroidered in an arabesque design, outlined with gold cord. Satin-bound books were produced in considerable numbers for James I and Charles I, but their production practically ceased at the dawn of the Commonwealth. It is frequently stated that embroidered books were produced by the Nuns of Little Gidding, but authorities are agreed that there are no genuine grounds for attributing such bindings to them. A

typical embroidered book of the seventeenth century is a Psalter, printed in London, in 1641, now in the British Museum, which has been wrongly ascribed to Little Gidding. The cover is of white satin, and on either side is worked a large orange tulip enclosed in an ornamental scroll and leaf border.

A material known as "purl" (i.e. a spiral wire cut into short lengths) was first imported from Germany and Italy in the sixteenth century, and from that time it was used in the embroidering of book-covers. A typical cover embellished with this material is a copy of the *Psalms*, London, 1646, in the British Museum; it is bound in white satin, and enriched with purl, together with a little gold braid and cord, the purl having been sewn down to the satin after a thread has been run through it. Both covers have a similar design, consisting of a large central flower with leaves, and a small flower in each corner.

Embroidered book-covers are not so flimsy as they may appear to be, and ladies in search of a fascinating hobby might with advantage return to the pastime of the ladies of earlier centuries. The sides of a book-cover lend themselves to great variety of originality in design, and ladies with skilful fingers could have their most cherished books prepared by a bookbinder and afterwards finish the books themselves by covering them in velvet, satin or canvas, which had been previously worked in coloured silks, or gold and silver thread.

222. Space does not permit of anything like adequate attention being paid to book-edge decoration, embroidered bindings, and books in metal or tortoise-shell covers, and so forth; and those readers desirous of pursuing these subjects are recommended to read the books and articles dealing with them which are enumerated in the bibliography at the end of this chapter.

In later medieval times and at the inception of the art of printing, if the books were arranged in an upright position on the shelves it was customary to expose their fore-edges to view; this practice naturally led to the placing of the title and other ornamentation on the fore-edge, while the backs were left unadorned. There are in existence in various libraries a number of good specimens of books having such

ornamentation, dating from the fifteenth and sixteenth centuries. Besides bearing the titles of the books, the fore-edges were often inscribed with the names or devices of their owners, with mottoes, or with religious phrases.

In the sixteenth century a common form of book-edge decoration was that now known as "gauffering," or gilding *à l'antique*, an operation which consisted in first gilding the edges and then working a design upon them with small tools which had been slightly warmed. The term "gauffering" is derived from the French *gauffré*, meaning figured or embossed, but this method of book-edge decoration is apparently not of French origin. Mr F. Hamel, in an article on "The Art of Book-Edge Decoration" in the *Book-Lover's Magazine*, states that the earliest examples of gauffering or tooling and chasing were produced at Venice and at Augsburg. In the reign of Louis XII this process came into vogue in France, and the earliest known French example is in the Bibliothèque Nationale on a copy of *Recueil de Pieces latines et grecques*, printed at Paris in 1507, by Gilles de Concourt. The cover of this book bears the arms and emblems of Louis XII, and the edges are beautifully tooled with a conventional floral design. In the British Museum are to be seen many fine specimens of books that formerly belonged to Henri II, Diane de Poitiers, and Catharine de Medici. The South Kensington Museum also possesses some fine examples, including the seven folio volumes of Luther's works, the fore-edges of which have the shield of Saxony painted in the centre, the remaining ground being filled with arabesques and Renaissance ornaments. A fine specimen of a gauffred edge in the Le Gascon style is shown at Fig. 45, taken from a volume in the British Museum.

Painted edges form another kind of book-edge decoration, of which there are two varieties. In the one species the painting is done on the surface of the edge while the book is closed and the leaves are pressed firmly together. In the other species the design is painted while the leaves are "fanned out" and the edges are thickly gilded after the book is closed. By this latter method the gold disappears when the book is opened and laid flat, and the design becomes visible; when the book is closed the painting disappears, the gold being sufficiently thick to conceal the painting.

A remarkable series of early examples of painted edges is the set of 170 volumes which at one time belonged to Odorico

FIG. 45. Gauffred Edge.

FIG. 46. Book Edge, painted under Gold.

Pillone, of Belluno. Of these books, over 140 have their edges adorned by Cesare Vecellio, a Venetian illuminator of the sixteenth century, and a nephew of the famous Titian. In describing some of the edges of these books the late Sir

Stirling Maxwell said: "Vecellio has generally contented himself with a single figure grandly designed and boldly coloured. St Jerome, sometimes in the red robes of the cardinal, sometimes in the semi-nudity of the hermit, appears in various attitudes on the fore-edges of the portly edition of his works, printed by Froben at Basle in 1537. . . . *Dante*, Venice, 1491, of course, has the well-known figure in red with the capucho of Old Florence. The *Dictionarium of Calepin*, Lugduni, 1578, has a vase with a tall flower of many blossoms; *Eutropius*, Basle, 1532, shows the heads of three emperors; and *Suetonius*, Basle, 1533, the same number of gold medallions on a light blue ground."

A fair example of painting under gold is the *De Maria Virgine*, Canisius, Ingolstadii, 1577, in a German binding, now preserved in the British Museum; the edges of this book (see Fig. 46) are in fair preservation and display the figures of the Virgin and Child, in the middle, and birds of paradise, with foliage around, at the top and bottom.

Mr Cyril Davenport, who has devoted considerable attention to the subject of book-edge decoration, states that the method of painting on the leaves after being fanned out was invented by Samuel Mearne, a number of whose books have their edges ornamented in this manner. This practice was revived by James Edwards of Halifax, examples of whose work are fairly common, and the art has been practised within recent years with much success by the late Mr John Fazakerly of Liverpool.

223. Publishers' cloth bindings were an English invention of the nineteenth century. The publishers' books of the first quarter of that century were generally issued in two forms: (1) roan or sprinkled sheep was commonly used for the binding of dictionaries, gazetteers, and similar works of reference, school-books, and classics; (2) paper-boards, of a drab or olive colour, with the title printed on a label and pasted on the back or the full title printed on the back and sides, was the usual garb for historical and topographical works, poetry and the drama, and fiction. The paper-boards provided a very temporary and inconvenient covering for a book, as the back soon cracked at the hinges, and the boards became severed from the book. About the year 1822 the disadvantages of this method led to the use of a strip of calico or cloth as a

covering for the back, but the usual paper label was still pasted on the back. There is no record of the exact date of the introduction of cloth for the entire covering of books, but it was apparently an English invention, and there seems to be no doubt that it was due to the enterprise of Archibald Leighton, probably in 1822. Stamping in gold upon cloth was first put to practical use in 1832; this fact is shown by the edition of Lord Byron's Life and Works in seventeen volumes, published by Murray in 1832-3. These volumes (which were issued monthly) were bound in green cloth with a watered silk pattern. The first volume was published in January, 1832, with a green paper label, upon which the title and coronet were printed in gold; the second and subsequent volumes were issued with the title and coronet stamped in gold upon the cloth. The next development was the use of gold in the decoration of the covers, and naturally perfection was attained only after gradual progress. A good specimen of early blocking in gold and in blind may be seen on the cover of Mrs Jameson's *Legends of the Monastic Orders*, published in 1850. In course of time stamping in gold was practised to an immoderate extent, and it speedily caused a reversion to the earlier method of issuing books in plain cloth covers, or in covers with a modicum of gold ornamentation.

Until about thirty years ago the publisher depended upon the binder for the designs for book-covers, and the bookbinder usually had to rely upon the die-cutter; consequently, most of the earlier designs had little or no artistic merit, and many of them were incongruous. Since that time progress in the art of making decorative book-covers has been rapid, each succeeding year witnessing a steady improvement in taste and style, and a distinct school of book-cover designers has arisen. A very large range of cloths of different colours is obtainable, and the mechanical processes for reproducing the designs have been almost perfected; gold blocking has reached a high standard of excellence, and colour printing upon book-covers is practised frequently with excellent artistic effect.

At the present day the art of designing ornamental book-covers and end-papers is in a very flourishing condition. There is an enormous variety in the designs, owing to the differences in the size and style of books, the innumerable subjects with which they deal, and the individual tastes of the

artists who produce them; these designs may be broadly classified into five groups: (1) Æsthetic, (2) Symbolic, (3) Heraldic, (4) Pictorial, (5) Portraits. In the production of these designs a large number of artists is engaged, who make a speciality of this branch of decorative art, while some artists who have gained distinction in larger fields of art have also devoted their talents to the production of decorative bookcovers and end-papers.

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END OF PART TWO.

GLOSSARY OF TERMS USED IN BOOKBINDING AND ALLIED INDUSTRIES

Compiled by Henry T. Coutts and Geo. A. Stephen.

ADVANCE COPIES OR SHEETS.—Copies of a book bound, or in sheets, printed for preliminary notices or for publication in more than one place at a time.

ALDINE OR ITALIAN STYLE.—Ornaments of solid face without any shading whatever, used by Aldus and other early Italian printers. The ornaments are Arabic in character, and are suitable for early printed books.

ALL ALONG.—The method of sewing by hand the sections (usually on cords or tapes) of a book, when the thread goes "all along," or from kettle-stitch to kettle-stitch, inside the fold of each section. Also used to describe machine book-sewing when each section is sewn with the full number of stitches.

ALL-OVER PATTERN.—A small pattern constantly repeated.

ANTIQUE PAPER.—A comprehensive term originally applied to machine-made papers made in imitation of old hand-made printing papers, to denote colour and finish. It is now used to describe any bulky paper with a rough surface. The commoner qualities are known as featherweight.

ANTIQUE TOOLING.—See Blind-tooled.

ARABESQUE.—A species of decoration consisting of interlaced lines and convoluted curves arranged in more or less geometrical patterns; so called because it was brought to its highest perfection by Arabian or kindred artists. Also applied to a fanciful mixture of animals, birds, and insects, and of plants, fruits and foliage, involved and twisted; but pure arabesque has in it no representation of living forms, as this is forbidden by the Koran.

ARABIC FIGURES.—The numeral characters, 1, 2, 3, etc., as distinct from Roman numerals, I, II, III, etc; so called as having been introduced into European from Arab use.

ARMING PRESS.—A small hand-power blocking press, primarily employed in impressing armorial bearings on the sides of books, whence its name.

ART PAPER.—A paper with a highly glazed surface, produced by a coating of mineral matter, adapted to half-tone printing.

ASTERISK.—A star (*) used in writing and printing to indicate a marginal reference, a footnote, an omission, an obscure or peculiar form, etc.

AZURED TOOLS.—Tools having a series of close parallel lines cut horizontally upon their face, and are so called because the colour blue in heraldry is represented in this manner.

BACK PAGES.—Those on the left side of an open book.

BACKING.—Bending over the folds at the back of a book to provide grooves into which to fit the boards. The ridge so formed is called a "joint."

BACKING BOARDS.—Boards used when backing and forming the groove or joint. They are made of very hard wood and sometimes faced with iron. The edge intended to form the groove is thicker than that which goes towards the fore-edge, so that when placed on either side of the book in the lying press the power of the press is directed towards the back.

BACKING HAMMER.—A broad, flat-faced hammer used for backing and rounding: it is somewhat similar to a shoemaker's hammer.

BACKING MACHINE.—A machine for backing books, generally used for publishers' binding and cheap work.

BACKS.—The "back" margin of pages; that part of the book which is sewn, when bound.

BAND DRIVER.—A blunt chisel used in forwarding to correct irregularities in the bands of flexible backs.

BAND NIPPERS.—Flat pincers used in covering for nipping up the bands.

BANDING.—Decorating by means of horizontal stripes, mostly filled with ornament.

BANDS.—The cords or strings whereon the sheets of a book are sewed. With flexible sewing the bands appear upon the back. When books are sewn so as to imbed the cord in the back, the appearance of raised bands is sometimes produced by narrow strips of leather glued across the back before the

volume is covered. The space between the bands is called "between bands."

BASTARD TITLE.—See Half-title.

BEADING.—The small twist formed when winding the cotton or silk in head-banding.

BEATING HAMMER.—A heavy short-handled hammer, generally about ten pounds in weight, used in conjunction with the beating-stone. Books are beaten to make the leaves lie close together.

BEATING STONE.—The bed of stone or iron on which books are, or were, beaten; now generally superseded by the rolling machine and standing press.

BEVELLED BOARDS.—Heavy boards with bevelled edges principally used for large books in imitation of antique work.

BIBLIOPEGY.—The art of bookbinding.

BINDER'S TITLE.—The title lettered by the binder on the back of a book. See also "Half title."

BINDERY.—A bookbinder's establishment.

BINDING.—See Bookbinding.

BINDING BOOK.—A register in which all books sent to the binder are recorded, with particulars as to lettering, style, colour, etc.

BINDING INSTRUCTION SLIP OR SHEET.—A slip or folio sheet on which the instructions for binding a particular book, or books, are written for the binder's guidance.

BINDING PROOF.—Some rough edges left on a trimmed book, to show that it has not been cut down excessively.

BLEED.—A book is said to "bleed" when it has been cut down so that the print is mutilated.

BLIND-TOOLED (OR BLOCKED).—Books which have been impressed with tools without being gilt or coloured are said to be "blind-tooled." This tooling is sometimes called "antique."

BLOCK.—The solid metal stamp used by bookbinders for impressing a design on a book-cover.

BLOCKING.—The impressing of gold leaf, metal foil, or other graphic media into the book-cover by means of a stamp having a raised surface. The term is also applied to the impressing of type, blocks, etc., without any intervening media, this operation being known as "blind blocking."

BLOCKING PRESS.—A press used for stamping designs

on the covers of books, largely employed in cloth work; known in the United States as a stamping press. A more general term for the arming press.

BOARD LABEL.—See Book-plate.

BOARD PAPERS.—The parts of the end-papers which are pasted to the boards.

BOARDING.—See Graining.

BOARDS.—These are of various kinds, such as pressing, cutting, backing, etc. The term is also applied to the mill-boards forming the sides of a book; in this connexion a book is said to be "in boards" when the mill-boards are covered with paper, in distinction from one that has its boards covered with leather or cloth.

BODKIN.—An awl used for making the holes in the mill-boards through which the bands on the back of the book are laced.

BODY OF THE WORK.—The text or subject-matter of a volume, so called to distinguish it from the preliminary matter, index, notes, etc.

BOLE.—The name of earthy or unctuous clay, used in the preparation for gilding edges.

BOLT.—The folded or doubled edge of paper at the head and fore-edge of a sheet in an uncut book. The iron bar with a screw and nut which holds the knife to the plough.

BOOKBINDING.—The act or process of binding a book, whereby the sheets of a book are sewn within a permanent cover of bookbinder's board and leather or cloth, or other suitable materials, covering the sides and back. The strong covering of the book.

BOOK-LABEL.—A slip pasted on to the inside of the front board of a book; the more elaborate being termed book-plates. A term applied to thin leather or paper labels for the backs of books, bearing title, etc., in gilt or other lettering.

BOOK-PLATE.—A label bearing a name, crest, monogram, or other design, generally pasted on to the inside of the front board, to indicate ownership.

BOOK-SHRINE.—A box or chest, usually ornamented, in which valuable books were placed.

BOSSES.—Metal ornaments fixed upon the boards of books for protection and embellishment.

BROADSIDE.—A large sheet of paper printed on one side.

BROCHURE.—Literally, "a stitched work" (from the French "*brocher*," to stitch). A short printed work of a few leaves, merely stitched together, and not bound; a pamphlet.

BROKEN OVER.—Plates are said to be "broken over" when they are folded or turned over a short distance from the back edge before being placed in the volume. This is done so that the plates may lay flat and be easily turned over.

BUNDLING PRESS.—A machine used for bundling and tying up the sheets or sections while under pressure.

BURNISH.—The gloss produced by the application of the burnisher to the edges.

BURNISHER.—A piece of agate or bloodstone affixed to a handle, by means of which a gloss is produced on the edges of a book.

CALENDERED PAPER.—Paper with a polished surface procured by the passing of the paper through a series of "calenders" or rollers.

CAMEO BINDING.—A binding having the centre of the boards stamped in relief, in imitation of antique gems or medals.

CANCEL.—A page, sheet, or other part of a printed book containing errors which are to be cut out and replaced by other printed matter. Such leaves are marked by the printer with an asterisk.

CAP.—The envelope of paper used to protect the edges while the volume is being covered and finished.

CARTOUCHE.—An ornamental shield or tablet, with the edges cut up, perforated and ornamented, used as a field for the title of a book or an inscription.

CASE-WORK.—The binding of a book when the cover is made independently, and the book afterwards pasted to it.

CASING.—The operation of inserting a sewn book into its "case."

CATCH-LETTERS.—Letters (usually three) placed at the top of pages in dictionaries, gazetteers, etc., those on *verso* page generally representing the first letters of the first word on that page, and those on *recto* the first letters of the last word on that page.

CATCHWORD.—The word occurring at the bottom of a page after the last line, such word being the first on the following page: its use in this way is now almost obsolete. A word at

the top of a page in encyclopædias and works of a similar nature, denoting the subject dealt with on the page.

CENTRE TOOLS.—Independent tools cut for the ornamentation of the centre of panels and sides of a book.

CHEQUERING.—To divide a surface like a chess-board in squares of alternately different ornament or colours, formed by equidistant vertical and horizontal lines.

CIRCUIT EDGES.—See Edges.

Cl.=Cloth.

CLASPS.—Metal hooks or catches used for fastening the boards of a book (when closed) together. Formerly used extensively, but seldom seen on modern books.

CLEARING-OUT.—Removing the waste paper, and paring away superfluous leather from the inside, preparatory to pasting down end-papers.

CLOTH.—Prepared linen or calico, known as bookbinders' cloth, used for covering books. Cloth bindings were not known until the year 1822.

CLOTH BOARDS.—Books bound in cloth-covered cases.

COBB PAPER.—A self-coloured paper, obtainable in various shades, largely used by binders as end-papers and for the sides of books. It derives its name from its inventor, or the binder who first used it.

CODEX (OR CAUDEX).—A term applied to two or more waxen tablets fastened together, used by the Greeks and Romans for writing upon with a stylus. Vellum books following the same arrangement were called codices.

COLLATE.—To examine a book by the signatures, or page by page, to see that the sheets are in proper sequence, and that none are in duplicate or missing.

COMB.—An instrument with wire teeth used in marbling.

CORNERS.—The leather or other material covering the corners of half or three-quarter bound books. Metal ornaments often used on books having clasps. Triangular tools used in finishing.

COUNTER-CHANGE.—A pattern in which the ornament and ground are the same shape.

CREASER.—The tool used in marking each side of the bands, generally made of steel.

CROPPED.—A book, the leaves of which are cut down too much, is said to be "cropped."

CROWN.—A sheet of paper, 20 by 15 inches. Folio, 15 by 10; quarto, 10 by $7\frac{1}{2}$; octavo, $7\frac{1}{2}$ by 5.

CRUSHED.—Leather which has been pressed between smooth metal plates to give a finish to the coarse grain is said to be crushed.

CUIR BOUILLI.—Leather prepared by boiling and pressing, so that it becomes extremely hard and capable of preserving permanently the shape and surface decoration given it, and can afford considerable resistance to sword-cuts and other violence.

CUMDACH.—A rectangular box (usually made of bronze, brass or wood, and plated with silver or gold which was ornamented) which was made for the preservation of precious books. Also called book-shrine.

CUT DOWN (AND UP).—When a plough-knife dips downward out of the level it is said to "cut down," and *vice versa*, "cut up."

CUT EDGES.—See Edges.

CUT FLUSH.—A book having its cover and edges quite even, the cutting operation having been done after the cover (usually paper boards or limp cloth) had been attached to the book.

CUTTER, OR CUTTING MACHINE.—The machine by which the edges of the leaves of books are cut or trimmed. See also Rotary Cutting Machine.

CUTTING IN BOARDS.—See "In boards."

CUTTING PRESS.—The "lying press" turned so that the side with the runners is uppermost.

DATE LABEL.—A label to show dates of issue or return, generally attached by a thin line of paste to the front fly-leaf of lending library books.

DECKLE EDGE.—The rough or raw edge of paper; specifically the ragged edge of hand-made paper produced by the "deckle" or frame of the mould on which the paper is made.

DEMY.—A sheet of paper, $22\frac{1}{2}$ by $17\frac{1}{2}$ inches. Folio, $17\frac{1}{2}$ by $11\frac{1}{4}$; quarto, $11\frac{1}{4}$ by $8\frac{3}{4}$; octavo, $8\frac{3}{4}$ by $5\frac{5}{8}$.

DENTELLE.—A style of book-cover decoration so called from its supposed resemblance to delicate lace.

DIAPER.—A pattern consisting of a simple figure constantly repeated in geometrical form; the pattern may consist of figures separated by the background only, or of com-

partments constantly succeeding one another, and filled with a design

DIE.—An engraved stamp used for stamping a design.

DIPTYCH.—A codex consisting of two leaves.

DIVINITY CALF.—A dark brown calf used chiefly for religious books, and executed in blind.

DORE À PETITS FERS.—Small hand tools used in gilding and binding.

DOUBLE BOOK.—A book printed on half sheets.

DOUBLED.—In finishing, when a tool is worked a second time and not placed exactly in the original position, it is said to be "doubled."

DOUBLURE.—The inside face of the boards, especially applied to them when lined with leather or silk and decorated.

DUMMY COPY.—A book composed of blank leaves made up to enable publishers and bookbinders to estimate their requirements.

DUODECIMO.—Sometimes called twelve-mo and generally written 12mo. A book printed on paper folded into 12 leaves; that is, 24 pp. The signatures are B, B2, B3 on the first, third and ninth pages.

DUTCH METAL (OR DUTCH LEAF).—One of the alloys used as a cheap substitute for gold leaf sometimes used on inferior bindings. It soon grows dull and tarnishes.

EDGE-ROLLED.—When the edges of the boards are rolled, either in blind or in gold.

EDGES.—*Circuit edges.* Covers, generally of Bibles and Prayer Books, turned over to protect the edges of the paper.

Cut edges. The three edges cut solid by a cutting machine.

Gauffré edges. The gilt edges having an indented decorative design made with the tools of the finisher.

Gilt edges. The three edges cut solid and gilt.

Gilt top. The top edge cut solid and gilt, the remaining edges being trimmed only.

Marbled edges. The three edges cut solid, and stained like marble.

Opened edges. Edges cut by hand with a paper knife.

Red under gold edges. The three edges cut and coloured red, and then gilt.

Sprinkled edges. The three cut edges finely sprinkled with colour.

Trimmed edges. The top edge untouched, and inequalities only removed from the others, the folds not being opened.

Uncut edges. The edges not cut down in size, and the original margins intact. The term does not mean that the leaves have not been cut for reading.

EDITION DE LUXE.—A sumptuous edition of a book, characterised by the choice quality and workmanship of the paper, typography, embellishment, binding, and the limited number of copies issued.

EDITION, LIMITED.—Where a smaller number than usual of a book is printed. Each copy generally contains a printed certificate, somewhat as this: "250 copies of this book have been printed, of which this is No. — " (the number being written in ink).

EIGHTEENMO (18mo).—A book having eighteen leaves to the sheet. Also called "octodecimo."

EMBOSSING.—The act or process of producing raised figures or designs upon surfaces by means of sunken dies, the material being interposed between the sunken die and the raised counterpart.

END-PAPERS, OR LINING-PAPERS.—The sheets placed at the beginning and end of a volume, half of each being pasted down upon the boards. Some end-papers are blank, others are coloured or printed, and others are marbled.

ETIQUETTE.—See Ticket.

EXTRA BINDING.—A trade term for the best work. Applicable to any book well forwarded, lined with marbled or other special paper, silk headbands, and gilt with a narrow roll round the sides and inside the "squares."

FANFARE BINDINGS.—A term derived from the title of a book bound for Charles Nodier by Thouvenin having *fanfare* for the principal word. The style consists of geometrical compartments formed by interlaced fillets, the intervening spaces being filled in with sprays of palm and laurel, and other foliated ornaments.

FEATHERWEIGHT PAPER.—A name commonly given to lightweight or spongy printing papers. This kind of paper is largely used by modern publishers, but is most unsatisfactory, inasmuch as it possesses little strength or substance, quickly absorbs dirt, and readily breaks away from the sewing thread.

FEINT.—A ruling term used to denote that the paper is ruled with faint cross lines.

FILLET.—A plain line or lines impressed upon the back or side of a book-cover. The wheel-shaped tool with which these lines are impressed.

FINE PAPER EDITION.—The best edition of a book.

FINISHER.—A person engaged in the work of "finishing."

FINISHING.—That branch of work concerned with the book after it has been put into its cover. Includes tooling, polishing.

FINISHING PRESS.—A small press by which a book is firmly held while being tooled.

FINISHING STOVE.—A fire, gas, or electric stove used for warming the tools employed in finishing.

FLEXIBLE.—When a book is sewn on raised bands or cords, and the thread is passed entirely round each band. It is the strongest form of sewing. A style of binding which allows the book to open perfectly flat.

FLUSH CUT.—See Cut Flush.

FLY-LEAF.—A blank leaf at the beginning or end of a book, between the end-paper and the book proper.

FLY-TITLE.—The half-title in front of the general title-page, or that dividing sections of a work.

FOLDER.—A flat piece of bone or ivory—sometimes called a folding stick—used in folding sheets, etc. The person engaged in the work of folding.

FOLDING MACHINE.—A machine for folding sheets, used in the larger binderies and newspaper offices.

FOLIO.—A sheet of paper folded to form two leaves or four pages.

FOOLSCAP.—A sheet of paper, 17 by $13\frac{1}{2}$ inches. Folio, $13\frac{1}{2}$ by $8\frac{1}{2}$; quarto, $8\frac{1}{2}$ by $6\frac{3}{4}$; octavo, $6\frac{3}{4}$ by $4\frac{1}{4}$.

FOREDGE (FORE EDGE).—The front edge of the leaves of a book.

FOREL (Also FORREL, FORRIL).—A case or cover in which a book or manuscript is kept for protection, or into which it is sewn. A kind of parchment dressed to look like vellum, used for covering books, especially account books.

FORMAT.—The size and shape of a book, *e.g.*, octavo, quarto, etc.

FORRIL.—See Forel.

FORWARDER.—A person engaged in the work of "forwarding."

FORWARDING.—The processes of binding a book after it is sewed until it is placed in its cover ready for "finishing."

FOUNT.—The complete number of letters, etc., constituting a set of type.

FOXED.—Books or paper which are stained or spotted through the action of damp.

FRENCH JOINT.—A joint formed by keeping boards a short distance from the back, splitting boards and placing tapes between, allowing greater play at hinge and permitting the use of a much thicker leather than otherwise.

FRONTISPIECE.—The plate or illustration facing the title-page of a book.

FULL-BOUND.—A book wholly covered with one piece of material.

GATHERING.—Collecting the several sheets when folded, and arranging them in sequence according to the signatures. Machines for doing this work are called gathering machines.

GAUFFRÉ EDGES.—See Edges.

GAUGE.—The tool used in forwarding to take the correct size of the book, and to mark it upon the boards for squaring.

GILT TOP.—See Edges.

GLAIRE.—An adhesive substance (made by beating up the white of eggs) used to retain gold in finishing and edge gilding.

GOFFERED EDGES.—See Edges.

GOLD CUSHION.—A leather cushion on which the gold leaf is cut.

GOLD KNIFE.—A long and straight knife for cutting the gold leaf.

GOUGE.—A tool used in finishing to make the segment of a circle.

GRAINING.—The process of producing the natural grain markings of leather by boarding, i.e., the pushing or pulling of a fold in the skin with the aid of a board covered with cork which grips that portion of the skin with which it is in contact. The act of producing a fictitious grain on leather by stamping it with metal plates or passing it through rollers on which the desired grain markings are engraved.

GRANGERIZING.—Extra-illustrating, or inserting engravings, portraits, etc., not issued with the book. The name is

derived from the Rev. James Granger's *Biographical History of England*, in which the author urged the value of a collection of engraved portraits; this work itself was largely used for Grangerizing.

GROOVES.—The projections formed on the sides of books in backing, to allow the boards to lie even with the back when laced in.

GUARDS.—Strips of paper or linen, inserted in the backs of books, to which are attached plates or extra leaves. Also the strips pasted along weak or broken folds to strengthen them.

GUIDES.—The grooves in which the plough moves upon the face of the cutting press.

GUILLOCHE.—An ornamental pattern composed of intersecting curved lines.

GUILLOTINE.—A machine for cutting paper, with a knife having a perpendicular action.

GUINEA-EDGE.—A roll with a pattern similar to the edge of an old guinea.

HALF-BOUND.—A book having a leather back and corners and paper or cloth sides.

HALF-TITLE.—The short title preceding the full title-page. Also termed "Bastard title."

HAND (OR HANDLE) LETTERS.—Letters fixed in handles, and used singly for lettering.

HEAD.—The top of a book.

HEAD-BAND.—The silk or cotton ornament worked at the head and tail of a volume, as a finish, and to make the back even with the boards. The head-bands on cheap bindings are simply strips cut from machine-made cord, and merely attached to the book for ornament.

HEAD-CAP.—The fold of leather over the head-band.

HEEL-BALL.—A preparation used by shoemakers in burnishing the heels of boots and shoes; useful for taking rubbings of books.

HOLEING.—Piercing the boards with a bodkin for the slips to pass through.

HOLLOW BACK.—A book bound with the leather, cloth, or other material attached at the joints, and not fastened to the back of the book itself.

HOLLOW TOOLING.—Ornamentation outlined in gold.

HYDRAULIC PRESS.—A press used in edition binding,

operated by the pressure of a liquid under the action either of gravity or of some mechanical device, as a force pump.

IMBRICATION. Overlapping, scale-like ornaments, derived from natural forms, as the scales of fishes, the feathers of birds, etc.

IMPERFECTIONS.—Sheets rejected as being imperfect, and for which others are required to complete the work.

IMPERIAL.—A sheet of paper, 30 by 22 inches. Folio, 22 by 15; quarto, 15 by 11; octavo, 11 by $7\frac{1}{2}$.

IN BOARDS.—When a book is cut after the mill-boards are attached, it is said to be cut in boards. *See also* "Boards."

INDIA PAPER.—A fine paper used for engravers' proofs.

INDIA PROOFS.—Strictly first proofs only of an illustration pulled on "India paper," but used indiscriminately for all illustrations printed on India paper.

INDIA-RUBBERED.—Books composed of single plates or leaves are sometimes coated at the back with a solution of indiarubber in lieu of guarding or overcasting.

INLAYING OR ONLAYING.—Adding a different leather from that of the cover for decorative purposes.

IN QUIRES.—Unbound books in sheets.

INSET.—An extra page, or set of pages, inserted in a book; an advertisement on a separate leaf inserted in a magazine; one folded sheet laid inside another.

INSIDE MARGINS.—The border made by the turn-in of the leather on the inside face of the boards.

INTERLACING.—Ornament composed of bands, etc., woven together.

INTERLEAF.—An extra leaf, usually blank, inserted between the regular leaves of a book.

JANSENIST STYLE.—Applied to bindings devoid of ornamentation on the outside of the covers, sometimes having, however, elaborately tooled doublures. The name is taken from Jansenius, Bishop of Ypres, who avoided the decoration of the altar.

JAPANESE VELLUM.—A costly hand-made Japanese paper, manufactured from the inner bark of the mulberry tree, having a vellum surface.

JAPON VELLUM.—A British made substitute for Japanese vellum.

JOINTS.—The two parts of the covering material that bend

when the covers are opened; the strips of cloth, leather, or other material that are used to reinforce the end-papers; the grooves formed by the backing process, which are made to receive the boards.

KETTLE-STITCH.—The stitch made at the head and tail of a book in hand-sewing, by which the thread of one section is fastened to the thread of another. The term is frequently regarded as being a corruption of "catch-up stitch," but it may be derived from the German *Ketten-stich* or chain stitch, or *Kettel-stich*, or the stitch that forms a little chain.

KEYS.—Small metal instruments used to secure the bands or cords to the sewing press.

KNOCKING-DOWN IRON.—A flat piece of iron, with a smooth face, having a ridge in the centre of the back, by which it is secured in the lying press. When fastened in the press, it is used as a bed on which the slips, after they are laced into the boards, are beaten with a hammer, so that they do not show when the book is covered.

LACING-IN.—Attaching the boards by the operation of passing the slips, on which the book is sewn, through holes pierced in the boards.

LARGE-PAPER EDITION.—Copies of a work printed on paper with wide margins.

LAW CALF.—The uncoloured calf in which law books are generally bound.

LAW SHEEP.—Smooth pale brown sheepskin.

LAY CORDS.—The cords, stretched on the sewing frame, to which the sheets of a book are sewn.

LAYING PRESS.—See Lying Press.

LEAF.—One of a number of folds (each containing two pages) which comprise a book or manuscript. Two pages back to back.

LEAFLET.—A small-sized leaf of paper, or a sheet folded into two or more leaves, containing printed matter, generally for gratuitous distribution.

LEATHERETTE.—Paper or cloth having a surface in imitation of leather.

LETTERING BOX.—A wooden box in which the hand-letters or type are kept.

LIMP COVERS.—Thin covers made without boards, in order that they may bend easily.

LINING PAPERS.—See End-papers.

LYING PRESS.—A small portable press of wood in which pressure is given at the ends of two stout square blocks by two large wooden screws. The under side of the cutting press, used in backing. Erroneously called a "laying press."

MAGAZINE CASE.—A cover for periodicals, usually having some contrivance for holding the magazine—cord, rod, etc. Also called "Periodical case" and "Reading case."

MANILLA PAPER.—A superfine tough quality of wrapping and label paper made from Manilla hemp; also applied to cheap imitations made from wood pulp.

MARBLING.—To stain or vein in representation of marble. The process of floating various colours on a medium, and transferring them to paper or book edges.

MARKING-UP.—Dividing the back into equal portions and marking the position of the cords.

MEDIUM.—A sheet of paper, 24 by 19 inches. Folio, 19 by 12; quarto, 12 by $9\frac{1}{2}$; octavo, $9\frac{1}{2}$ by 6.

MILL-BOARD.—A kind of stout paste-board, made of pulp of old rope, sacking, and other similar coarse material, and "milled" or rolled with high pressure; used to form the covers of books.

MILLBOARD MACHINE.—A machine used for cutting and squaring boards. The edge cut by this machine is not so square as that cut by the plough, and it should, therefore, only be used for cheap work.

MITRED.—When the lines in finishing meet each other at right angles without overrunning each other, they are said to be mitred. Joined at an angle of 45° as in the leather on the insides of the boards.

MOSAIC.—A decoration formed by inlaying small pieces of leather of various colours to form a pattern.

MULL.—A thin loosely woven cotton cloth glued on to the backs of books to help to hold the sections together. Known as "Super" in America.

NETWORK.—A design made of intersecting lines forming squares set lozengewise.

OBVERSE COVER.—The upper cover of a book.

OCTAVO.—Contraction, Oct., 8vo; the size of a book printed on paper folded into 8 leaves, or 16 pp. The signatures are B, B2, on pages 1 and 3. The usual sizes are Imp.

8vo, Royal 8vo, Demy 8vo, Post 8vo, Crown 8vo, and Foolscap 8vo.

OCTODECIMO (18mo).—A book having 18 leaves to the sheet.

OFF-CUT.—That part of a sheet which has to be cut off so that the sheet may be correctly folded, as in the case of a 12mo.

OFF-SET.—See Set-off.

ONE SHEET ON.—See All Along.

OUT OF BOARDS.—When a volume is cut before the boards are affixed.

OUT OF TRUTH.—A book that is not cut square.

OVERCASTING.—The act or process of sewing over and over the leaves of a book, usually done when it consists of single leaves. Called "Whip-stitching" in America.

OVERSEWING.—See Overcasting.

PALLET.—A tool, engraved with letters, a line or ornament, used in finishing the backs of books; also, the brass type-holder used for lettering in conjunction with a set of type, fitted with an end- and side-screw and handle, in which are fastened the types selected for lettering.

PAMPHLET.—Any work not exceeding five sheets, stitched or sewed, usually in paper covers.

PANEL.—A compartment of the external cover of a book enclosed in a border or frame; also the space between two bands on the back of a book.

PANEL STAMP.—A large stamp used for impressing a design on the sides of book-covers. Some of the stamps used for the early leather bindings were of quarto and folio size, but often book-covers of these sizes were impressed two, three, four or more times with small panel stamps.

PAPERING-UP.—Covering the edges after they are gilt, to protect them while the volume is being covered and finished.

PARING.—Shaving the edges of the leather, and reducing them by forming a gradual slope.

PARING KNIFE.—The knife used for paring.

PASTEBOARD.—A substance made by pasting sheets of paper together, or by macerating paper and casting it in moulds; pasteboards superseded the old wooden boards, and have now been superseded by millboards and strawboards.

PASTE-WASH.—Paste diluted with water.

PEEL.—A T-shaped instrument used to convey damp, freshly printed sheets to and from the horizontal poles on which they are dried.

PENCIL.—A small camel-hair brush used for glairing.

PERIODICAL CASE.—See "Magazine case."

PETITS FERS.—Small hand tools used in finishing, as distinguished from the stamps or blocks worked in a press.

PIECED.—Any space that has a piece of another material attached to it, as a lettering piece.

PLATE.—An illustration printed from a plate. Term often incorrectly applied to illustrations printed from woodcuts. Any full-page illustration printed on different paper to that of the book is usually called a "plate."

PLATE PAPER.—See Art Paper.

PLOUGH.—The hand-implement used for cutting the edges of a book, the book being secured in the lying press. The knife attached to the plough is known as the "plough knife."

POCKET.—A slip or small envelope pasted on to the inside of the front (or back) board of a book, to form a pocket for the book-card. The envelope made to receive loose maps, etc.

POINTILLÉ STYLE.—The style associated with the name of Le Gascon; the designs are worked in innumerable gold dots.

POINTS.—Small holes made in the sheets during the printing process which serve as guides in registering when the sheets are folded by machinery.

POLAIRE.—The leather cases or satchels in which the ancient monks placed their books.

POLISHER.—A steel instrument for giving a gloss to the leather after finishing.

POLYTYCH.—A codex consisting of several leaves.

POST.—A sheet of paper, 20 by 16 inches. Folio, 16 by 10; quarto, 10 by 8; octavo, 8 by 5.

POWDER or SEMÉ.—Decoration by means of small figures (sprays, flowers, leaves, etc.) frequently repeated, at regular intervals, producing a powdered effect.

POTT.—A sheet of paper, $15\frac{1}{2}$ by $12\frac{1}{2}$ inches. Folio, $12\frac{1}{2}$ by $7\frac{3}{4}$; quarto, $7\frac{3}{4}$ by $6\frac{1}{4}$; octavo, $6\frac{1}{4}$ by $3\frac{7}{8}$.

PRELIMINARY MATTER.—The title, preface, contents, and other matter coming before the main body of a work.

PRESS PIN.—An iron bar used as a lever for standing and lying presses.

PRESSES.—These are of several kinds, namely, lying, cutting, standing, blocking, and finishing presses. The frame on which a book is sewn is called a " sewing press."

PRESSING BLOCKS.—Blocks of wood used in a standing press to fill up the space not occupied by books.

PRESSING BOARDS.—Boards of carefully seasoned wood between which books are piled in a standing press, to equalize impression.

PRESSING PLATES.—Plates of metal japanned or nickelled, used for giving finish to the leather on a book.

PROOF.—The rough edges of certain leaves left uncut by the plough are " proof " that the book is not cut down.

PUBLISHER'S BINDING.—The original cover of a book, generally cloth-cased work.

PULLED.—When a book is cut from its cover and all the sheets are separated.

QUARTER-BOUND.—A book with leather back and cloth or paper sides.

QUARTO.—The size of a book printed on paper folded into 4 leaves, or 8 pp. The signatures are B on page 1, C on page 9, etc. Contraction, 4to.

QUIRE.—Twenty-four sheets; also, a set of all the sheets required to make one complete book.

RASPED.—Having the sharp edges of millboards or strawboards rubbed down, but not bevelled.

READING CASE.—See " Magazine Case."

RE-CASING.—The re-insertion of a book into its original cover, with or without re-sewing.

RECTO.—The right-hand page of a book; always the odd page.

REGISTER.—The ribbon attached to a volume to serve as a book-marker. A list of signatures attached to the end of early-printed books for the use of the binder. In printing, a term used when the printing on the recto is exactly printed on the back of the verso.

REGISTER (BINDING).—A book in which the binding records are kept.

REVERSE COVER.—The lower cover of a book.

ROLL.—A hand-tool having a brass wheel on the circum-

ference of which is engraved a pattern which reproduces itself as the wheel is rolled over the leather.

ROLLING MACHINE.—A machine which does the work of beating, the sheets being passed between two revolving cylinders.

ROMAN NUMERALS.—I, II, III, etc., as distinguished from Arabic numerals, 1, 2, 3, etc.

ROTARY CUTTING MACHINE.—A machine for cutting millboards and strawboards which has a series of circular cutters.

ROULETTE.—See Roll.

ROUNDED CORNERS.—In library bookbinding the sharp corners of the boards are sometimes cut and slightly rounded as a preventative against wear.

ROUNDING.—The term applied to the process of rounding the back of a book, to prevent an objectionable concave form.

ROUNDING AND BACKING MACHINE.—A machine that rounds and backs books by one continuous operation.

ROUNDLET.—A small circle in gold.

ROXBURGHE BINDING.—Plain leather back, no raised bands, lettered in gold near the top, cloth or paper sides, leaves gilt at top, otherwise unopened.

ROYAL.—A sheet of paper, 25 by 20 inches. Folio, 20 by 12½; quarto, 12½ by 10; octavo, 10 by 6¼.

RUB (or RUBBING).—A copy of the back or sides of a book showing lettering, bands, etc. The paper or tracing linen is firmly held on the back, and a cobbler's heel-ball rubbed over it until a recognizable copy of all details of the back or sides of the volume is obtained.

RUNNER.—The front board used in cutting edges.

RUN-UP.—When the back has a fillet run from head to tail without being mitred at each band it is said to be "run-up."

SADDLE STITCHING.—Binding a pamphlet which consists of one section only by placing it on the saddle of a stitching machine where it is automatically stitched with wire or thread through the centre of the fold.

SAWING-IN.—Sawing grooves in the back of a book for the reception of the cord in sewing.

SAWING MACHINE.—A machine which does the work of sawing-in."

SECTION.—A folded sheet.

SEMÉ.—See Powder.

SETTING THE HEAD-BAND.—Adjusting the leather in covering so as to form a kind of cap to the head-band.

SET-OFF.—Print is said to "set-off" when part of the ink from a page is impressed on the opposite page. This will happen as a result of rolling or beating while the ink is damp. Sometimes termed "off-set."

SEWER.—The person who sews the sheets together, on the sewing press, to form a book. The person who feeds a book-sewing machine. This work is generally done by women.

SEWING.—The operation of fastening together with thread or wire the sections of a book. The process is distinct from stabbing and stitching.

SEWING PRESS.—A frame, consisting of a board having on one side two upright columns, connected at the top by a cross-piece, between which and the base are stretched tapes or cords to which the sections of a book are successively sewed.

SEXTODECIMO.—Contraction 16mo. The size of a book or paper folded into 16 leaves, making 32 pp.

SHAVING-TUB.—The paper cut from the edges of a volume are called shavings. The receptacle into which they fall while the forwarder is cutting is termed the shaving-tub.

SHEARS, MILLBOARD.—Large scissors used for cutting and squaring millboard.

SHEETS, IN.—Sheets not folded, or if folded not bound.

SIGNATURE.—The small letter or figure at the foot of the first page of each sheet, to indicate the sequence of the sheets; also applied to a folded sheet.

SIGNATURE PRESS.—See Bundling Press.

SIXTEENMO (16mo).—A book having 16 leaves to the sheet. Also called "Sextodecimo."

SIZE.—A preparation used in finishing and gilding.

SIZE COPY. A dummy of blank paper to show size of bound book.

SLIPS. The pieces of sewing cord or tape which project beyond the back of a book after it is sewn, and which are afterwards attached to the boards. The paper slips on which are written the instructions to the binder.

SMALL PAPER EDITION.—The ordinary copies of a work.

SOLID TOOLING.—Solid ornamentation in gold.

SPOTTING.—As powdering, but with a geometric basis, the ground occupying larger space than the ornament.

SPRINKLED EDGES.—See Edges.

SQUARES.—The portion of the boards of a volume which project beyond the edges after the book is cut.

STABBING.—The binding together of one or more sections with wire or thread passed vertically through the left-hand side of the folded sheets. Piercing the boards with a bodkin for the slips to pass through is sometimes termed "stabbing."

STAMP.—An engraved block, die or the like, upon which is cut the design for the sides or back of a book.

STAMPING PRESS.—See Blocking Press.

STANDING PRESS.—A fixed heavy press with a perpendicular screw over the centre; so called to distinguish it from a portable press.

START.—When any of the sections project beyond the others, they are said to have started. When the back has been broken by forcing the leaves they start.

STIFFENER.—A thin millboard used for various purposes.

STITCHING.—The operation of fastening a pamphlet, consisting of a single section, with wire or thread passed through the centre of the fold.

STOPS.—Small circular tools, adapted to "stop" a fillet when it intersects at right angles; used to save the time mitring would occupy.

STRAIGHT-EDGE.—A small board having one edge perfectly straight. A flat steel or other ruler.

SUB-TITLE.—A bastard, fly, or half-title placed before the full title page.

SUPER.—See Mull.

SUPER-EXTRA.—In the best manner: coloured end leaves, double head-bands, etc.

SUPER ROYAL.—A sheet of paper, $27\frac{1}{2}$ by $20\frac{1}{2}$ inches. Folio, $20\frac{1}{2}$ by $13\frac{3}{4}$; quarto, $13\frac{3}{4}$ by $10\frac{1}{4}$; octavo, $10\frac{1}{4}$ by $6\frac{7}{8}$.

TACKY.—Sticky.

TAG.—A small label pasted to the back of a library book, on which the call number or classification symbol is written or printed.

TAIL.—The bottom of a book.

TENON SAW.—A small saw, strictly speaking a carpenter's tool, used for sawing books preparatory to sewing.

THIRTY-TWOMO (32mo).—A book having 32 leaves to the sheet. Also called "trigesimo-secundo."

THREE-QUARTER BOUND.—When the leather is attached to the back and a fairly large portion of the sides and corners of a book it is said to be "three-quarter bound."

THROWN OUT.—Maps, tables, or diagrams likely to be much consulted during the reading of a book, are sometimes "thrown-out" by the binder. This is done by making the "guard" the size of the page and pasting in at end of book, so that the map, etc., may remain in view during reading.

TICKET (French, ETIQUETTE).—The small label bearing the binder's name, sometimes affixed to the inner boards.

TIES.—Silk, leather, cord, or other slips are sometimes attached to the boards of books for decorative purposes, or to prevent sagging; their use is justified only in the case of thick volumes, containing many folded maps or plates, which are liable to sag.

TIGHT BACK.—The cover of leather or other material pasted or glued to the back of the book, so that it does not become hollow when open.

TIPPING.—When a single leaf is pasted on to a section of a book it is said to be "tipped in."

TITLE.—The page at the beginning of a book giving particulars as to name, author, publisher, date of publication, etc. The space between the bands upon which the lettering is placed.

TOOL.—The metal implement on which is cut the ornament or part of ornament which is to be transferred to the book-cover.

TOOLING.—The ornamentation obtained by impressing the heated tools on the covering material.

TREE-CALF.—A bright brown calf stained with a conventional tree-like design.

TRIGESIMO-SECUNDO (32mo).—A book having 32 leaves to the sheet.

TRIMMED EDGES.—See Edges.

TRINDLE.—A thin strip of iron or wood, in the shape of an elongated **U**, used for forcing the back up quite flat preparatory to cutting the fore-edge.

TRIPTYCH.—A codex consisting of three leaves, hinged or tied together.

TUB.—The stand which supports the lying and cutting press. Originally an actual tub to catch the shavings.

TURNING-UP.—Throwing the round out of the back, when cutting the fore-edge, until the edge is cut. A pair of trindles are thrust between the boards and across the back of a book that is cut in boards, to assist the operation.

TWELVEMO (12mo).—A book having 12 leaves to the sheet. Also called "duodecimo."

TWENTY-FOURMO (24mo).—A book having 24 leaves to the sheet. Also called "vigesimo-quarto."

TWO SHEETS ON.—The method of sewing books when two sections are treated as one. In hand-sewing two sheets at a time are placed on the sewing-frame; the thread is passed from the kettle-stitch of the lower section, and brought out at the first tape or cord, when it is inserted in the upper section, and so on. In hand-sewing or machine-sewing by this method two sections only receive the same number of stitches as one sheet would do by the "all along" method.

TYING-UP.—The tying of a volume after the cover has been drawn on, so as to make the leather adhere better to the sides of the bands; also for setting the head-band.

TYPE.—Metal characters used in lettering, in lieu of handle-letters.

TYPE-HOLDER.—An instrument for holding the type used for lettering.

UNCUT EDGES.—See Edges.

UNOPENED.—A book is said to be unopened when the bolts or folds of the sheets are uncut.

VARNISH.—A preparation used partly to preserve the leather, and partly to give an additional gloss.

VERSO.—The page of a book on the reverse or left-hand side in contradistinction to the *recto*, and therefore always the even page.

VIGESIMO-QUARTO. (24mo).—A book having 24 leaves to the sheet.

VOLUME.—A book distinguished from other books or volumes of the same work, by having its own title, paging, and register.

WASTE.—The advertisement sheets, etc., generally to be

found at the beginning and end of serial publications, are termed "waste."

WATERMARK.—The wire-mark or design in a sheet of paper to distinguish the maker or mill, consisting of a semi-translucent name or device seen when the paper is held against the light.

WATERPROOF SHEETS.—Sheets of celluloid such as are used by photographers.

WHIP-STITCHING.—See Overcasting.

WHOLE BOUND.—A book wholly covered with one piece of the same material. Also termed "Full bound."

WIRE SEWING.—Sewing the sections of a book with wire staples driven through the centre of the sections and through tapes, canvas or muslin, to which the staples are clinched.

WIRE STITCHING.—The fastening of a single section with wire driven through the centre of the fold and clinched.

WITNESS.—When a volume is trimmed so as to show that it has not been cut down, but that some of the leaves have still rough edges. These uncut leaves are called "Witness." (See Proof.)

WRINKLE.—The uneven surface in a volume, caused by not being properly pressed or by dampness, also caused by improper backing.

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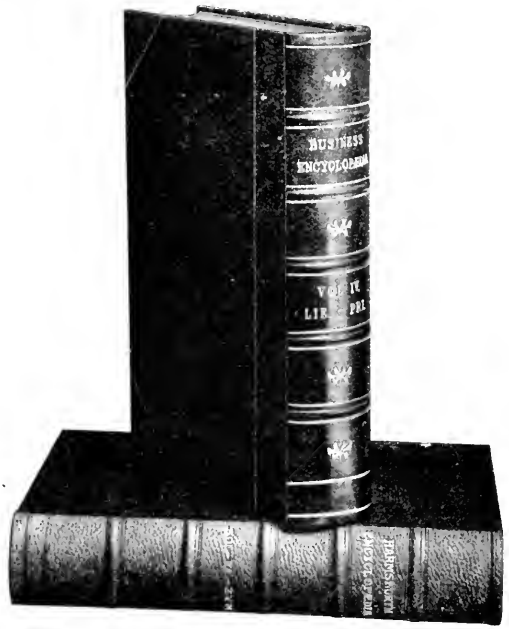

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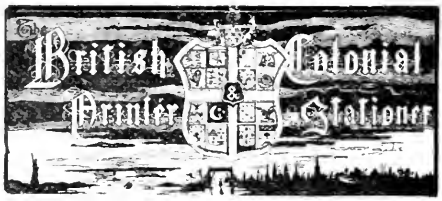

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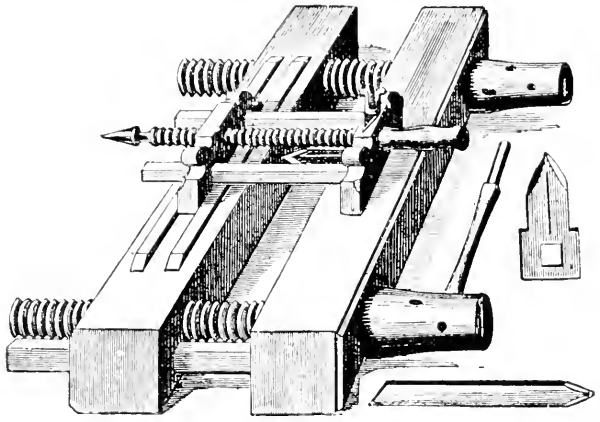

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